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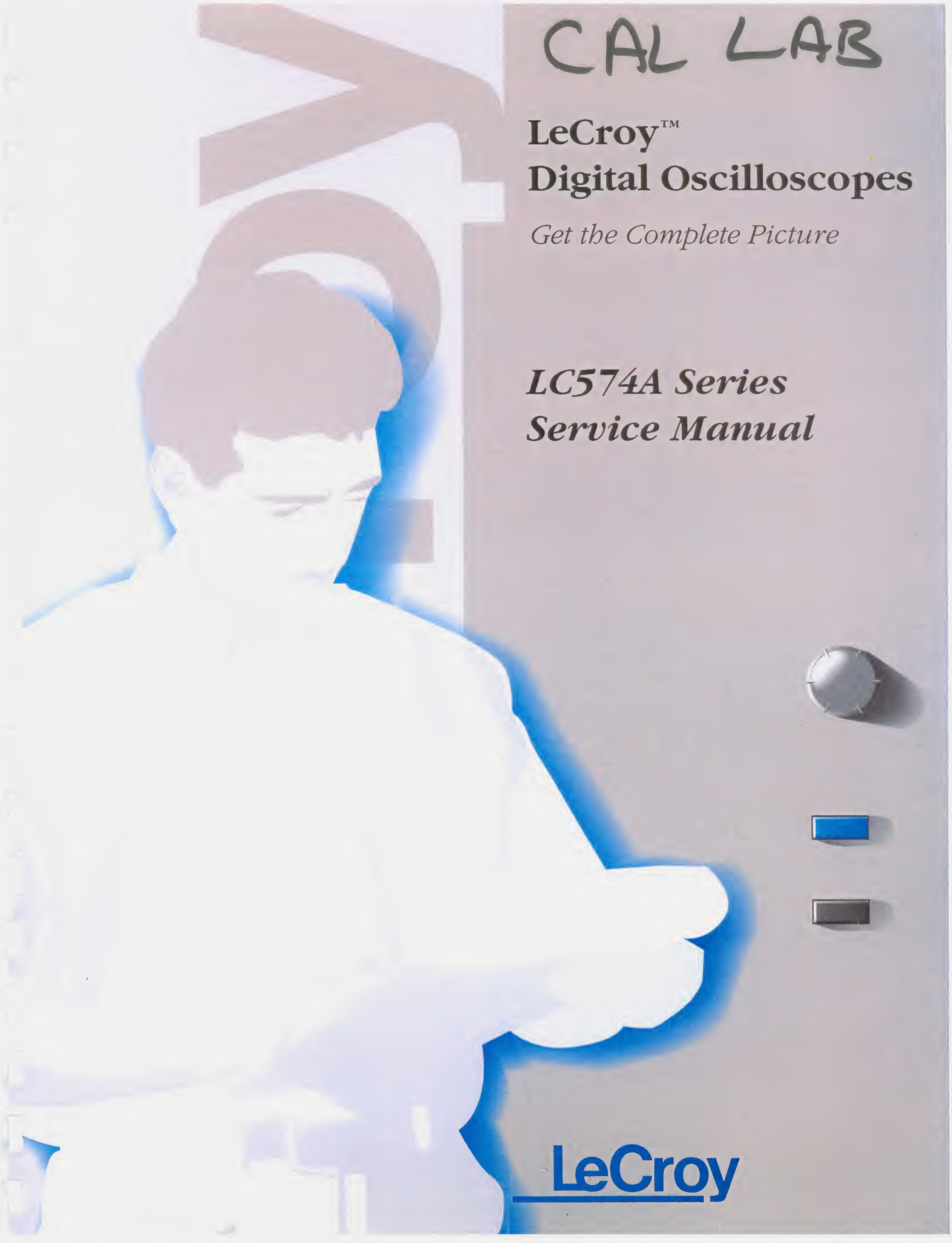


LeCroy™ Digital Oscilloscopes

Get the Complete Picture

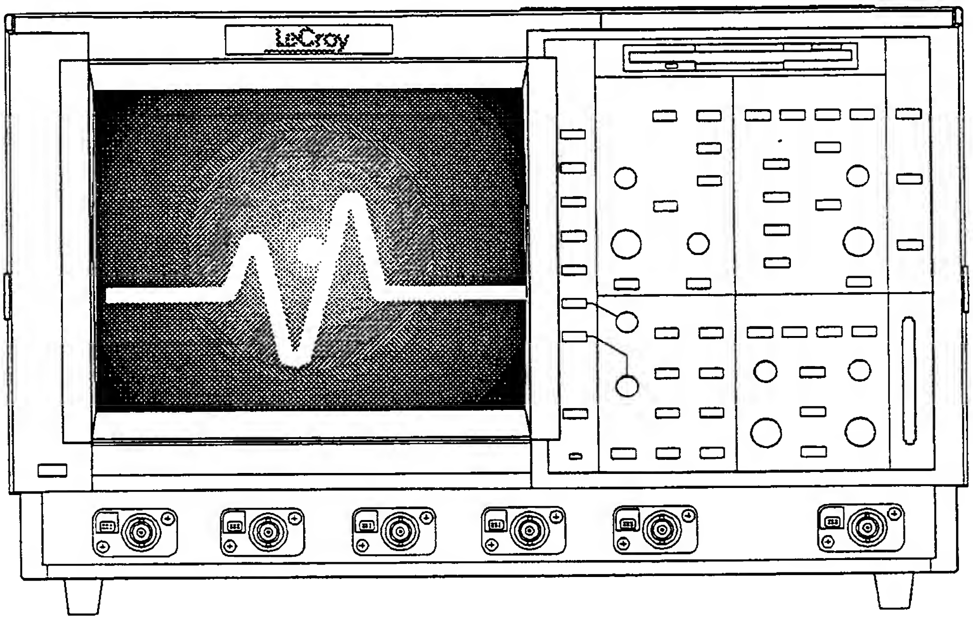
LC574A Series Service Manual

LeCroy

LeCroy Color Digital Oscilloscopes

LC574A, LC574AM & LC574AL

Service Manual



Version A February 1998

LeCroy

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LeCroy

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1. Product and Client Care

1.1 As Soon As Your Scope is Delivered

We recommend you thoroughly inspect the contents of the scope packaging at once. Check all the contents against the enclosed *packing list*. Unless LeCroy is notified promptly of a missing or damaged item, we cannot accept responsibility for its replacement. Contact your national LeCroy Customer Service Department or local office immediately.

1.2 Warranty

LeCroy warrants its oscilloscope products for normal use and operation within specifications for a period of three years from the date of shipment. Calibration each year is recommended to ensure in-spec performance. Spares, replacement parts and repairs are warranted for 90 days. The instrument's firmware has been thoroughly tested and is thought to be functional, but is supplied without warranty of any kind covering detailed performance. Products not made by LeCroy are covered solely by the warranty of the original equipment manufacturer.

In exercising its warranty, LeCroy will repair or, at its option, replace any product returned within the warranty period to the Customer Service Department or an authorized service center. However, this will be done only if the product is determined by LeCroy's examination to be defective due to workmanship or materials, and the defect has not been caused by misuse, neglect or accident, or by abnormal conditions or operation.

The client will be responsible for the transportation and insurance charges for the return of products to the service facility. LeCroy will return all products under warranty with transport prepaid.

This warranty replaces all other warranties, expressed or implied, including but not limited to any implied warranty of merchantability, fitness, or adequacy for any particular purpose or use. LeCroy shall not be liable for any special, incidental, or consequential damages, whether in contract or otherwise.

1.3 Maintenance Agreements

We provide a variety of customer support services. Maintenance agreements give extended warranty and allow our clients to budget maintenance costs after the initial three-year warranty has expired. Other services such as installation, training, enhancements and on-site repairs are available through special Supplemental Support Agreements

1.4 Keeping You Up to Date

LeCroy is dedicated to offering state-of-the-art instruments, continually refining and improving the performance of our products. Because of the speed with which physical modifications may be implemented, this manual and related documentation may not agree in every detail with the products they describe. For example, there might be small discrepancies in the values of components affecting pulse shape, timing or offset, and — infrequently — minor logic changes.

However, be assured the scope itself is in full order and incorporates the most up-to-date circuitry. We frequently update firmware or software during servicing to improve scope performance, free of charge during warranty. We will keep you up to date with such changes, through manuals such as this one and other publications.

1.5 Service and Repair

Please return products requiring maintenance to the Customer Service Department in your country or to an authorized service facility. LeCroy will repair or replace any product under warranty free of charge. The customer is responsible for transportation charges to the factory, whereas all in-warranty products will be returned to you with transportation prepaid.

Outside the warranty period, you will need to provide us with a *purchase order number* before we can repair your LeCroy product. You will be billed for parts and labor related to the repair work, and for shipping.

1.6 How to Return a Product

Contact your country's Customer Service Department or local field office to find out where to return the product. All returned products should be identified by model and serial number. You should describe the defect or failure, and provide your name and contact number. And in the case of products returned to the factory, a *Return Authorization Number* (RAN) should be used. The RAN can be obtained by contacting your nearest LeCroy office, or the New York Customer Care Center or European Manufacturing in Geneva (*see chapter 2 for contact numbers*).

Return shipments should be made prepaid. We cannot accept COD (Cash On Delivery) or Collect Return shipments. We recommend air-freighting. It is important that the RAN be clearly shown on the outside of the shipping package for prompt redirection to the appropriate LeCroy department.

Wherever possible, use the original shipping carton. If a substitute carton is used, it should be rigid and packed so that that the product is surrounded by a minimum of four inches or 10 cm of shock-absorbent material.

2. General Information

2.1 Product Assistance

Help on installation, calibration, and the use of LeCroy equipment is available from your local LeCroy office, or from LeCroy's

- Customer Care Center, 700 Chestnut Ridge Road, Chestnut Ridge, New York 10977–6499, U.S.A., tel. (914) 578–6020
- European Manufacturing, 2, rue du Pré-de-la-Fontaine, 1217 Meyrin 1, Geneva Switzerland, tel. (41) 22/719 21 11.

2.2 Addresses

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184 24 Akersberga
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Causeway Bay

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Philips Scientific & Industrial Electronics
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North Ryde NSW 2113
Australia

Tel : 61 2 98888222
Fax : 61 2 98880440

Abex Engineering Pte. Ltd.
37 Kallang Pudding Road 08-08
Tong Lee Building Block B
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Fax : 65.8415988

Lecoln Technology Co.,Ltd.
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Yung Ho City Taipei Hsien
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Fax : 886.2.231.9731

Schmidt Electronics Ltd
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Hong Kong

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Fax : 852.2827.5656

Electro Tech Corporation
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Shaheed-Millat/Jamaludding
Karachi-74800 Pakistan

Tel : 92.21.493-9593
Fax : 92.21.493-7749

Tata-Honeywell
55-A/8 & 9 Hadapspar
Indusrial Estate
Pune 411 013 India

Tel : 91.212.675.532
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Tel : 852.2507.0222
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Measuretronix
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Bangkok 10240
Thailand

Tel : 66.2.375.2733-4
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Korea

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Fax : 82.2.449.5475

P.t. Dwi Tunggal Jaya Sakti
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Fax : 62.21.797.5186

Schmidt Vietnam co ltd
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Fax : 84.4.346.188

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ATP-Hi-Tek
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Casilla 51888 Stgo-1
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Electroingenieria De Precision
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South Africa

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Randburg 2194
Republic of South Africa

Tel : 27.11.787.0473
Fax : 27.11.787.0237

2.3 Installation for Safe and Efficient Operation

Operating Environment

The oscilloscope will operate to its specifications if the environment is maintained within the following parameters:

Temperature................5 to 40 °C (41 to 104 °F) rated.

Humidity.......................Maximum relative humidity 80 % RH (non-condensing) for temperatures up to 31 °C decreasing linearly to 50 % relative humidity at 40 °C

Altitude.........................2000 m (6560 ft)

The oscilloscope has been qualified to the following EN61010-1 category:

Installation (Overvoltage) Category.............................II

Pollution Degree............................2

Safety Symbols

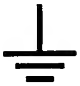
Where these symbols or indications appear on the front or rear panels, and in this manual, they have the following meanings:

⚠........................... **CAUTION**: Refer to accompanying documents (for Safety-related information). *See elsewhere in this manual wherever the symbol is present,as indicated in the Table of Contents.*

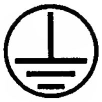
⚡........................... **CAUTION**: Risk of electric shock

○............................ **On (Supply)**

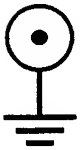
|...................................... **Off (Supply)**



.... **Earth (Ground) Terminal**



.... **Protective Conductor Terminal**



.... **Earth (Ground) Terminal on BNC Connectors**

WARNING .... **Denotes a hazard. If a WARNING is indicated on the instrument, do not proceed until its conditions are understood and met.**

⚠ **WARNING**

> **Any use of this instrument in a manner not specified by the manufacturer may impair the instrument's safety protection.**

The oscilloscope has *not* been designed to make direct measurements on the human body. Users who connect a LeCroy oscilloscope directly to a person do so at their own risk.

Power Requirements

The oscilloscope operates from a 115 V (90 to 132 V) or 220 V (180 to 250 V) AC power source at 45 Hz to 66 Hz. No voltage selection is required, since the instrument automatically adapts to the line voltage present.

The power supply of the oscilloscope is protected against short-circuit and overload by means of two 6.3 A/250 V AC, "T" rated fuses (size: 5 X 20 mm), located above the mains plug. Disconnect the power cord before inspecting or replacing a fuse. Open the fuse box by inserting a small screwdriver under the plastic cover and prying it open.

For continued fire protection at all line voltages, replace only with fuses of the specified type and rating (T 6.3 A/250 V).

The oscilloscope has been designed to operate from a single-phase power source, with one of the current-carrying conductors (neutral conductor) at ground (earth) potential.

Maintain the ground line to avoid an electric shock.

None of the current-carrying conductors may exceed 250 V rms with respect to ground potential. The oscilloscope is provided with a three-wire electrical cord containing a three-terminal polarized plug for mains voltage and safety ground connection.

The plug's ground terminal is connected directly to the frame of the unit. For adequate protection against electrical hazard, this plug must be inserted into a mating outlet containing a safety ground contact.

Cleaning And Maintenance

Maintenance and repairs should be carried out exclusively by a LeCroy technician (*see* Chapter 2). Cleaning should be limited to the exterior of the instrument only, using a damp, soft cloth. Do not use chemicals or abrasive elements. Under no circumstances should moisture be allowed to penetrate the oscilloscope. To avoid electric shocks, disconnect the instrument from the power supply before cleaning.

⚠ **CAUTION**

Risk of electrical shock: No user serviceable parts inside. Leave repair to qualified personnel.

Power On

Connect the oscilloscope to the power outlet and switch it on by pressing the power switch located on the rear panel. After the instrument is switched on, auto-calibration is performed and a test of the oscilloscope's ADCs and memories is carried out. The full testing procedure takes approximately 10 seconds, after which time a display will appear on the screen.

3.5 Triggering System

Modes: Normal, Auto, Single, and Stop.
Sources: CH1, CH2, CH3, CH4 Line, Ext, Ext/10. Slope, Level and Coupling are unique to each source.
Slope: Positive, Negative.
Coupling: AC, DC, HF, LFREJ, HFREJ.
Pre-trigger recording: 0 to 100% of full scale (adjustable in 1% increments).
Post-trigger delay: 0 to 10,000 divisions (adjustable in 0.1 div increments).
Holdoff by time: 10 ns to 20 s.
Holdoff by events: 0 to 99,999,999.
Internal Trigger Range: ±5 div.
EXT Trigger Max Input: 10MΩ//15pF (system capacitance using PP005):
400V(DC+peakAC≤10kHz)
50Ω ±1%: ±5 V DC (500 mW) or 5 V RMS.
EXT Trigger Range: ±0.5 V (±5 V with Ext/10).
Trigger Timing: Trigger Date and Time are listed in the Memory Status Menu.
Trigger Comparator: Optional ECL rear panel output. Alternatively, the calibrator output can provide a trigger output or a PASS/FAIL test output.

3.6 Smart Trigger Types

Pattern: Trigger on the logic combination of 5 inputs - CH1, CH2, CH3, CH4, and EXT Trigger, where each source can be de-fined as High, Low or Don't Care. The Trigger can be defined as the beginning or end of the specified pattern.
Signal or Pattern Width: Trigger on width between two limits selectable from ≤ 2.5ns to 20s. Will typically trigger on glitches 1ns wide.
Signal or Pattern Interval: Trigger on interval between two limits selectable from 10ns to 20s.
Dropout: Trigger if the input signal drops out for longer than a time-out from 25ns to 20s.
State/Edge Qualified: Trigger on any source only if a given state (or transition) has occurred on another source. The delay between these events can be defined as a number of events on the trigger channel or as a time interval.
TV: Allows selection of both line (up to 1500) and field number (up to 8) for PAL, SECAM, NTSC or non-standard video.
Exclusion Trigger: Trigger on intermittent faults by specifying the normal width or period of a signal. The oscilloscope will trigger only on aberrations which are shorter or longer than normal.

3.7 Autosetup

Pressing Autosetup sets timebase, trigger and sensitivity to display a wide range of repetitive signals. (Frequency above 50Hz; Duty Cycle greater than 0.1%).
Autosetup Time: Approximately 2 seconds.
Vertical Find: Automatically sets sensitivity and offset for selected channel.

3.8 Probes

One PP005probe is supplied per channel. DC to 500 MHz typical at probe tip, 500 V max.
Probe calibration: Max 1 V into 1 MΩ, 500 mV into 50 Ω, frequency and amplitude programmable, pulse or square wave selectable, rise and fall time 1 ns typical.

3.9 9" Color Display

LeCroy provides a very large, sharp oscilloscope screen that is 50% larger in total viewing area than a 7" screen.

Its powerful features include Analog Persistence, Color Graded Persistence, Full Screen mode, Opaque or Transparent display, color association and personal color schemes. These provide the user with outstanding benefits that accelerate visual processing and effective communication of on-screen information.

3.10 High Speed Acquisition

The design and debug of fast digital systems and the need to capture fast transient signals require high speed signal capture. The LC574AA four channel 1 GS/s, 1 GHz bandwidth DSO operates at a 4 GS/s sample rate for single channel inputs. The high sample rate, bandwidth and the 1 GHz trigger bandwidth provide a flexible solution for capturing and viewing fast rise time signals.

3.11 Large Sample Rate Window

Having a high sample rate in a DSO is only the first step to preserving data integrity. The time window over which this sample rate is available is also of critical importance.

Long acquisition memory maintains the oscilloscope's highest sample rate for large time windows allowing the user to sample long signals with high horizontal resolution.

With up to 8 million points of acquisition memory the maximum sample rate of these oscilloscopes of 4 GS/s is maintained for a time window of 2ms. This sample rate window - 16 times greater than the maximum sample rate window of competing DSOs - enables the user to record long signals with high resolution.

3.12 Optimum Performance

SMARTMemory is a Total Memory Management system that dynamically allocates resources of microprocessor power, acquisition memory and processing RAM. The intelligent management provided by SMARTMemory guarantees optimal usage of oscilloscope resources.

The 96 MHz PowerPC microprocessor at the heart of these DSOs drives the system to produce results fast, providing rapid waveform update and super panel responsiveness.

3.13 Quick Diagnoses

Capturing and viewing waveforms is fundamental to an oscilloscope. Productivity improvements are accessible by using built-in math functions to assist troubleshooting and diagnoses of circuit problems.

The signal analysis capability of these DSOs is enhanced by advanced waveform math, spectrum analysis, and waveform parameter analysis. This analysis capability greatly increases the speed with which circuit problems are clearly identified and solved.

3.14 Analog Persistence

At a push of the green button the user can switch between an analog view and a digital view of signals on these oscilloscopes.

The depth of signal information can be explored along the third dimension of the waveform display to give the user a complete picture of waveform activity.

Unlike an analog oscilloscope, all signal data is captured and available in memory for analysis and measurements. Analog Persistence gives the user the best of both the analog and digital world of oscilloscopes.

3.15 Full Screen Grid

These LeCroy DSOs not only have a very large 9” screen but also provide a display mode with an extra-large grid, up to 150% larger than common grid areas. In Full Screen mode, all of the screen area is used to display signals. This provides a magnificent view of up to 8 waveforms: signal details are seen more clearly and with greater ease.

3.16 8 Trace display

8 trace display with any combination of math functions, zooms, reference memories or channels.

Octal grid display in normal and Full Screen display modes, with and without parameters displayed.

3.17 Easy Documentation

All waveform data and results of analysis can be quickly saved to floppy disk, memory card, ATA flash card, or a removable hard disk. This provides an efficient way to archive information and facilitates easy documentation of results.

An optional internal graphics printer outputs screen dumps in seconds providing the user with an immediate and clear record of signal activity.

3.18 Signal Viewing

Type: Color 10" Raster Scan CRT, 0.26mm dot pitch.
Resolution: 640 x 480 points.
Display Area: 170mm x 125mm - 50% greater than that of a 7" display.
Controls: Rear-Panel presets for position, brightness and contrast.
Menu controls for brightness and color selection.
Grid Styles: Single, Dual, Octal, Quad, XY, Single+XY, Dual+XY, and Full Screen an enlarged view of each grid style.
Graticules: Internally generated; separate intensity control for grids and waveforms. Selectable blending of grid with displayed traces.
Waveform Style: Dot Join with optional sample point highlight or Dots only.
Persistence Modes: Color graded persistence and analog persistence, infinite or variable with decay over time. In color graded persistence a color spectrum from red through violet is used to map signal intensity. With Analog Persistence the brightness level of a single color denotes signal intensity. Each trace's persistence data is stored in 64k levels.
Trace Display: Opaque or transparent mode, with overlap management.
Number of Traces: 8 (any mix of channels, memories or Math functions).
Real-time Clock: Date, hours, minutes, seconds.
External Monitor: Rear-panel 15-pin socket for VGA compatible monitor.
Vertical Zoom: Up to 5x vertical expansion to a maximum of 5 mV/div (50x with averaging)
Horizontal Zoom: Waveforms can be expanded to give .4-.5 points/division. Zoom factors up to 2,000,000x with all channels combined for the 'AL' model.

3.19 Signal Analysis

A comprehensive and easy-to-use set of diagnostic tools are available. Calculations are performed rapidly and results can be presented on-screen or stored to disk.
Rapid Processing System
Microprocessor: 96 MHz PowerPC™ 603e.
System RAM: 8 to 64 Mbytes.
Video Memory: 1 Mbyte.
Cache Memory: 32 kbyte.
Persistence Data Map Memory: 16 bits per displayed pixel (64k levels).

3.20 Waveform Processing

Up to four processing functions may be performed simultaneously. Standard functions available are: Add, Subtract, Multiply, Divide, Negate, Identity, Summation Averaging and Sine x/x. The source information for a math function trace can be data from an acquisition channel or from another math function trace. This allows display of traces which "daisy chain" math functions.
Average: Up to 10^6 averages are possible.
Extrema*: Roof, Floor, or Envelope values from 1 to 10^6 sweeps.
ERES*: Six Low-Pass digital filters provide up to 11-bit vertical resolution. Sampled data is always available, even when a trace is turned off.
FFT*: Spectrum Analysis with five windowing functions and FFT averaging.

3.21 Statistical Diagnostics*

The Parameter Analysis package permits in-depth diagnostics on waveform parameters. Live histogramming of any waveform parameter measurement is possible and the histogram can be autoscaled to display the center and width of the distribution.
Any of the above processes can be invoked without losing the data.

*Extrema and ERES modes are provided in the Advanced Waveform Math Package. FFT is in Spectrum Analysis. Histogramming and trending is part of the Parameter Analysis Package.

3.22 Internal Memory

Waveform Memory: Up to four 16-bit Memories (M1, M2, M3, M4), whose length corresponds to the length of the channel acquisition memory.
Zoom & Math Memory: Up to four 16-bit Waveform Processing Memories (A, B, C, D), whose length corresponds to the length of the channel acquisition memory.
Setup Memory: Four non-volatile memories. Optional Memory Cards, Flash Disks or removable Hard Disks may also be used for high-capacity waveform and setup storage.

3.23 Cursor Measurements

Relative Time: Two cursors provide time measurements with resolution of ±0.05% full scale for unexpanded traces; up to 10% of the sampling interval for expanded traces. The corresponding frequency value is displayed.
Relative Voltage: Two horizontal bars measure voltage differences up to ±0.2%, of full scale in single-grid mode.
Absolute Time: A cross-hair marker measures time relative to the trigger and voltage with respect to ground.
Absolute Voltage: A reference bar measures voltage with respect to ground.

Automated Measurements

A wide range of pulse parameter measurements are available. These are categorized for ease of use. The categories include Pulse, Horizontal, and Vertical parameters. Basic statistical measurements, included as standard, (average, highest, lowest, and standard deviation) can be made on these parameter measurements in order to understand their distribution. Pass/Fail Testing and Waveform Limit testing using masks can be performed. Test conditions can be expressed as either waveform parameter limits, waveform shape limits (mask) or a combination of both. Any failure can cause preprogrammed actions such as Hardcopy, Save, GPIB service request, logic pulse out, audible beep, or any combination of the above.

3.24 Additional Information

Interfacing

Remote Control: Possible by GPIB and RS-232-C for all front-panel controls, as well as all internal functions.
RS-232-C Port: Asynchronous up to19.2 Kb/s for computer/terminal control or printer/plotter connection.
GPIB Port: (IEEE-488.1) Configurable as talker/listener for computer control and fast data transfer, up to 300 kbytes/sec. Command Language complies with requirements of IEEE-488.2.
Centronics Port: Hardcopy parallel interface is standard.
PC Card (PCMCIA I/II/III) Ports: For memory cards, ATA compatible flash cards and removable hard disks - optional.
Floppy Disk: High density 3.5” floppy disk drive (DOS format) is standard.
VGA Compatible Display: 15-pin D-type VGA compatible connector for external color display.
Hardcopy: Screen dumps are activated by a front-panel button or via remote control. TIFF and BMP formats are available for importing to Desktop Pub-lishing programs. The following printers can be used to make hardcopies:
B/W: HP LaserJet, HP DeskJet 500, Epson FX.
Color: HP DeskJet 550C, Epson Stylus. An optional internal high resolution graphics printer is also available for screen dumps; a stripchart output format with 2 meters per division is also possible.
Output Formats: ASCII waveform out-put is available in seconds, compatible with spreadsheets, MATLAB™, MathCad™. Binary output is also available.

General

Auto-calibration ensures specified DC and timing accuracy.
Temperature: 5° to 40°C (41° to 104° F) rated 0° to 50°C (32° to 122° F) operating.
Humidity: 80% for temperatures up to 31°C decreasing linearly to 50% relative humidity at 40°C.
Altitude: Up to 2000m (operating), 40°C max.
Power: 90-132V AC, 180-250V AC, 45-66 Hz, 400 W.
Battery Backup: Front-panel settings maintained for two years.
Dimensions: (HWD)10.4" x 15.65" x 17.85", 264 mm x 397 mm x 453 mm.
Weight: 20kg (44 lbs) net, 28 kg (61.6 lbs) shipping.
Warranty: Three years.
UL: Meets UL safety standards.

CE Approval

EMC: Conforms to EN50081-1,EN50082.
Safety: The oscilloscope has been designed to comply with EN61010-1 Installation Category (Over-voltage Category) II, 300V, Pollution Degree 2.

4. Theory of Operation

4.1 Processor Board : F9601-1-8 or F9601-1-64

MPC603e Processor

This processor board is based on to the Power MPC603e processor.
It is a 64-bit RISC processor with 2x32kbyte cache. It features high speed processing and fast memory accesses.
The processor is set to an internal clock of three times the external bus clock (3x32MHz = 96 MHz), and used in a 32-bit mode.

There are two "worlds" on the board:

- the 32-bit world, including the main PowerPC processor, the dynamic RAM modules and the VGA interface;
- the 8 or 16-bit world, including all other on-board peripherals, external small peripherals and acquisition board.

A MC68150 dynamic bus sizer is used as an interface between the two worlds.

Power Supplies

The board uses three power supplies from the main acquisition board: Vcc, +15V and -15V. Vee is wired on a connector for board test purposes.
The +15V supply OP-amps on the 9601-1 board, and +15V and -15V supply small peripherals.
The current processor needs a 3.3V power supply, all the rest of the logic needs 5V. All signals are TTL compatible.
The PLL circuit (88916) generates a PLL_LOCK signal, which is used to clamp the 3.3V and 2.5V references as long as the 32MHz clock is not stable. The processor also needs to be protected against too big voltage differences between 2.5V and 3.3V (diodes on the reference).
An OP-amp and a MOSFET transistor for each power supply are used. The reference voltages are taken directly from the 5V power supply by a resistive divider.
Capacitors and a few diodes ensure that the supplies do not exceed dangerous levels at power-up, nor rise too fast.

32-bit Peripherals

There are only three devices hooked up on to the processors 32-bit data bus:

- the VGA video controller
- the DRAM system
- the bus sizer, bridge to the 68k-like world

Processor Block Diagram

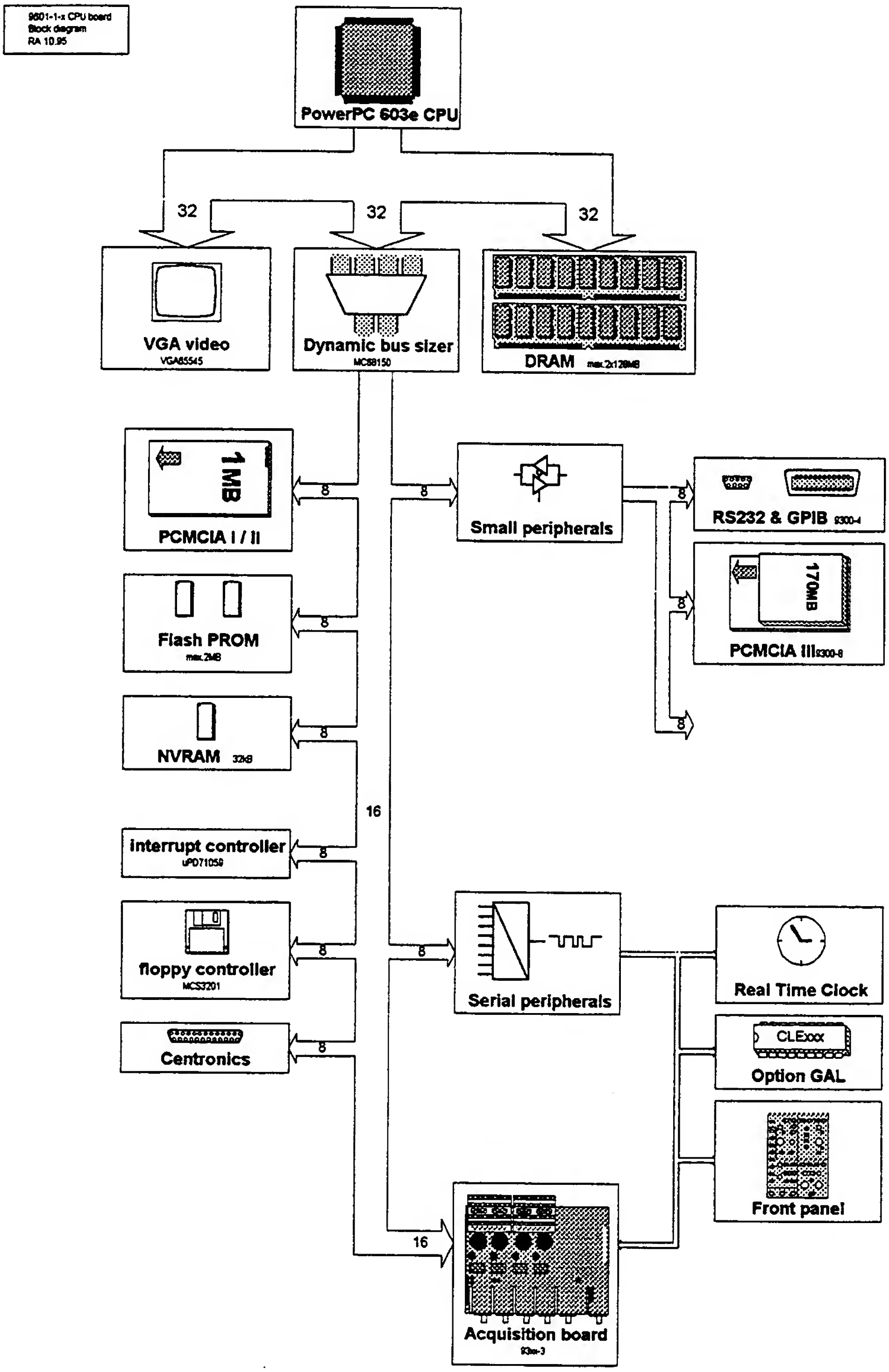


Fig 4-1 9601-1 Block diagram

DRAM

The DRAM consists of two SIMM modules from 4 MB up to 32 MB each.
By interleaving two SIMMs, the access time is dramatically reduced (one beat every 30ns, while the other module “recovers” from the previous access).
The DRAM control logic, including refresh control, is built around several GALs and a few gates.
RAMEUR (A44) is the main sequencer. It inserts refresh cycles whenever needed, and drives row and column addressing timing.
RASADE (A39) controls the row address select lines of the memory modules, and generates the addresses for double beat or burst accesses.
OCCASE (A37) generates the column address select lines of the SIMMs.
DRAME (A57) holds some glue logic, and a state machine that counts the number of beats, inserting pauses in the access if necessary (single SIMM support).
Four multiplexers (A40, 42, 46 and 47) switch between odd and even addresses to be sent to the address lines of the modules. One more multiplexer (A38) switches low order address bits, routing them either directly to the processor, or to the DRAM address generator in RASADE.

Normal Access Timing

This is the simplest access possible: the processor puts an address onto the address bus, and reads back or writes one long word (32-bit wide) to DRAM. Depending on the address (odd or even), bank A or bank B is selected in a dual SIMM configuration.

Burst Access Timing

A burst access on a 603e configured as a 32-bit device, consists of either two (“double beat”) or eight (“burst”) successive reads in DRAM. The idea is to put a start address onto the address bus, and read back or write several data’s from or to DRAM every clock cycle, without the processor incrementing the address (this is done by the external logic). To increase system performance, the memory has been interleaved, allowing each module to access a memory location every 60ns, but with a delay of 30ns between the modules.
A burst access is signaled by an active low _TBST signal and a 32-bit access (SIZ2..0= 011), a double-beat access is indicated by a high _TBST but an access size of 64 bits (SIZ2..0= 100). The double-beat case is decoded by a GAL (VIADUC), and the signal is named _DBEAT (active low).

Refresh Timing

The 32 kHz clock from the real time clock chip is used to refresh periodically the DRAM.
The GAL RAMEUR generates the refresh cycles, as well as the sequencing of _RAS and _CAS. Depending on the operating mode, it chooses to access slot A or selects alternately slots A and B.

Memory Mapping

By default, the board is set to the biggest memory size possible. The software checks out for “holes” in the addressing space, and sets accordingly two configuration lines, MAP1 and MAP0.

MAP1..0	meaning
00	2x4, single sided SIMMs
01	2x8 MB SIMMs
10	2x32 MB SIMMs

VGA

The VGA 65545 controller chip (A27) includes its own address decoding logic. It generates all video signals (red, green and blue video, horizontal and vertical syncs, and all control lines to drive a flat panel) and controls its associated 1 MB video dynamic RAM (reads, write and refresh cycles).
All timings are extracted from the 16 MHz bus clock, so no external crystal or timebase is needed.

The horizontal and vertical sync. signals are sent to both the internal and the external video connector (high density DB15 on the 9601-2 board). The external syncs are direct, the internal syncs pass through the GAL VIADUC (A32), allowing to force these two lines to ground. This puts the internal display in power down mode (standby mode).
The chip can support several bus interfaces (PCI, ISA, VL,), it is configured as VL-bus.

The 65545 chip generates red, green and blue video signals. These are controlled-impedance lines (37.5 Ohm approximately, which corresponds to two 75 Ohm loads in parallel). A low-pass filter is implemented right at the outputs from the VGA controller, and another low-pass filter is located at each video connector on the 9601-2 board (just after the “active” load).

9601-2 Board: VGA proper termination (auto termination)

The 9601-2 board is a complement to the 9601-1 main processor board. It holds the external Centronics connector (female DB-25) with its EMI filters, both internal and external VGA connectors (female mini DB-15), and line termination for R, G and B signals.

The VGA controller is able to drive a load of 37.5 Ohms on its Red, Green and Blue outputs (two 75 Ohms loads in parallel). The line impedance of these signals on the processor board is therefore close to 37.5 Ohms. The 9601-2 board includes a special termination circuit that keeps the loads on the R, G and B lines at 37.5 Ohms, no matter if one or two 75 Ohms loads are connected. The circuit assumes that a 75 Ohms load is present on each output.

Bus Sizer

The MPC603e processor does not support dynamic bus sizing, as did the 68k family. Many parts of the software and the hardware rely on that feature. A Motorola MC68150 chip 'translates' the PowerPC 32-bit data bus to a 68030 8 or 16-bit bus. Except DRAM and VGA controller, all peripherals work on this 68k-type bus. Full compatibility is therefore ensured with current acquisition boards and small peripherals.

16 and 8-bit Peripherals

The only 16-bit peripheral hooked on the bus is the acquisition board.
RETINE (A36) generates wait state timings and is used to switch between cold boot (return to default state) and warm boot (do a RESET, but keep current scope settings), and generates a bus error if max. access time is out and no peripheral has acknowledged the access.
ASSISE (A21) generates chip select signals for the bus sizer, BUDGET (A28) creates typical 68k signals (_BAS, _BDS, 16MHz clock).
The peripheral address decoding is done by a set of GALs (GRANDS (A20), PETITS (A29)) and a few multiplexers (A30, A22). GRANDS selects between main peripheral categories (VGA, DRAM, memory card, flash PROM, acquisition board or other peripherals), PETITS generates chip select signals for 8-bit peripherals (flash PROM, memory card, non-volatile RAM, Centronics and "others"). It also determines how many wait states are needed for peripherals not able to acknowledge a bus access. This is done by pulling low _DSACK0 after having sensed the corresponding number of wait states trough _BWT1 and _BWT3, which ends the current access.
The multiplexer A30 does a finer decoding between "others" decoded in PETITS, namely interrupt controller, small peripherals, serial interface, flash PROM chip 1 or 2, and status registers.

PCMCIA type I / II interface

This interface consists mainly of buffers for both data and address busses.
An OP amp (A10) and a MOS transistor (Q3) allow to switch off the memory card power supply while no card is plugged in, and turn it on slowly when plugged in.
The GAL CARDAN (A11) handles the card format and generates several control signals accordingly.
A16 (an hex D-type flip-flop) holds control bits for 12Vpp (flash programming voltage), DRAM memory mapping and memory card type. All bits of this register reset to zero when the _RESET signal goes active low, which means that their state is also guaranteed at power-up.
A9 and A12 are the read registers for several status bits.
Several EXOR gates (A17 and A18) invert the most significant address bits of the memory card whenever the SWAP jumper is plugged in, so that the first bytes are always located at 0xFFF00000, regardless of the size of the memory card. This allows to boot directly from a PCMCIA memory card.

Flash PROM

Two Intel 28F008-compatible 1MB PROMs (A24 and A25), are used.
From a hardware point of view, a flash PROM is the same as an EPROM in read mode. To write to it, however, a programming voltage (Vpp) needs to be applied to a pin. The 12V voltage is generated by a switching regulator (A26), controlled by a logic level (_EPPP).

NVRAM

This chip is powered through the lithium battery (VCT) when power is off. The chip select is held high through a pull-up resistor to VCT to avoid accidental overwriting while power is off.

Interrupt Controller

In order to keep compatibility with both 68k hardware and software, it is necessary to use a chip that prioritizes several interrupt sources. This is done by an NEC chip, a uPD71059. It scans eight interrupt pins and sends a unique interrupt to the processor when a (non-masked) interrupt appears.

Interrupt levels are assigned the following:

level 0	(lowest priority) acquisition board
level 1	small peripherals, unused
level 2	RS232
level 3	GPIB
level 4	small peripherals and acquisition board, unused
level 5	real time clock
level 6	time base (acquisition board)
level 7	(highest priority) only for test purposes. Linked to level 2 for debugging.

Floppy Controller

The floppy controller chip directly interfaces to a double or high-density disk drive. The floppy controller has a digital 8-bit input/output register, which is used to read several status lines from the drive (disk inserted, etc.).
In principle, the controller is able to provide an interrupt when accesses are completed. As these accesses are performed in non-time critical paths of the program, The interrupt line has been wired to the input register, so that the program has to poll this register until the interrupt line goes active.
The controller has it's own timebase, a 24MHz crystal.

Centronics

Both external and internal Centronics ports are write-only. The data get latched in a 74HCT374 register (A45 for internal Centronics, A55 for external).

Small Peripheral Interface

This 8-bit interface is intended to allow external expansion to the processor board. A56 and A53 (74HCT541 tri-state buffers) buffer the address and control lines, and A62 (74HCT245, bi-directional tri-state buffers) buffer the data lines.
The address decoding is done on each peripheral board. The acknowledge for each access is also done by the peripheral device, so that there is no restriction on wait-states. The bus clock runs at 16mhz, and a reset line reinitializes the boards at the same time as the CPU.
Four interrupt lines are also included in this interface, so that interrupt-driven boards can be used (a good example is the 9300-4 GPIB/RS232 board, which uses interrupts 2 and 3).

Serial Interface for on-board Peripherals

Two GALs (SEVERE and SAVEUR) are used to access serial on-board devices, like the real time clock, option GAL, front panel and some parts of the acquisition board. The principle of such a serial access is the following:
every write or read to the serial interface allows to write or read one bit (the MSB of the byte). To write a byte to a serial device, you need eight accesses to the serial interface.
Many serial devices need the same protocol: you first send a command byte (read, write, clear, etc.), and then read or write one or several data (if required).
Depending on the address the serial interface is been accessed, the corresponding device gets selected (_SSER, _SFPR, _SLED or SRTC lines). A clock (_SCKA), a read data (SDRA or SDRD) and a write data (SDWA or SDWD) constitute the serial interface itself (the D suffix on read and write data lines means Digital, i.e. devices on the CPU board; an A suffix means devices on the Acquisition board).

RTC

The 68HC68T1 real time clock has several functions:

- keep a time-of-the-day and current-date information while the DSO is not powered on.
- generate a 32kHz clock for DRAM refreshment.
- generate a 128Hz periodic interrupt to force bus accesses from the processor (otherwise the watchdog timer would time out and reset the board) and allow periodic update of the time display ("scope alive").

The chip uses it's own 32.768kHz crystal to keep the time and derive all timings. A few discrete components around it leave the chip powered by the backup lithium battery while the rest of the board is not powered, and charge the battery when the power is on again.

Option GAL

The option GAL is a hardware key to unlock specific software functionality's. A pattern is sent to the GAL, which responds with another pattern. If the two fit, the feature is unlocked.

Front Panel

The front panel LED can be controlled by a serial write access. The LED (write only) shares the same address as the option GAL (read only).
The LED is driven by the less significant bit (LSB) of the control register.

Watchdog and Reset Generation

The power supply is monitored by a TL7770-5 chip. Whenever the Vcc voltage goes below 4.8V (even for a short time !), a reset pulse is generated, whose width is determined by an RC time constant (33uF and internal resistor).
The second half of this chip serves as watchdog circuit. The processor needs to poll a sense line on that chip from time to time (typically a few ms). By doing this, a capacitor (33uF) is discharged. When not polled, it gets charged by a constant current, and when a given threshold is exceeded, a reset pulse is generated.
The LED connected goes off whenever the _RESET line is low, so a blinking LED indicates either no bus access for longer than a few hundreds of ms, or a problem (glitch) on the Vcc power supply.

Bus Error Generation

A bus error exception is generated when the _TEA pin is pulled low on the processor. The 603e expects a _TA signal as an acknowledge to the current data transaction, and inserts wait states as long as _TA has not been pulled low at the correct timing (refer to the MPC603e documentation for exact timing information's).
An external circuit is required to break the pending cycle if no device responds after a given time-out.
This is the job of the GAL RETINE (A36), which counts the number of wait states already passed (4 bit Gray counter). An external 4-bit counter (A59) extends the count to 160 (tbd) wait cycles before triggering a bus error.
An acknowledge (_DSACK1..0 lines) aborts the time-out count and finishes successfully the current cycle.

I/O Structure and GALs Involved

The following bloc diagram describes the peripheral decoding flow, and what GAL is involved in the decoding. The three frames group the peripherals into 8, 16 or 32-bit devices. The simple 3D-blocs represent an on-board device. The 3D-blocks with an arrow represent external devices (more generally: accessed through a connector).
GRANDS does the main decoding of peripherals and the 93xx-3 acquisition board.
PETITS does the sub-decoding for all 8-bit peripherals.
VIADUC handles the Motorola to Intel format decoding for the VGA controller.
CARDAN takes care of the PCMCIA interface timings.
PROFIL dispatches 8-bit data to the Centronics or the Floppy controller.
SAVEUR and SEVERE generate the serial clock and routes the data to the right serial device, including CLExxx, which is the option PAL.

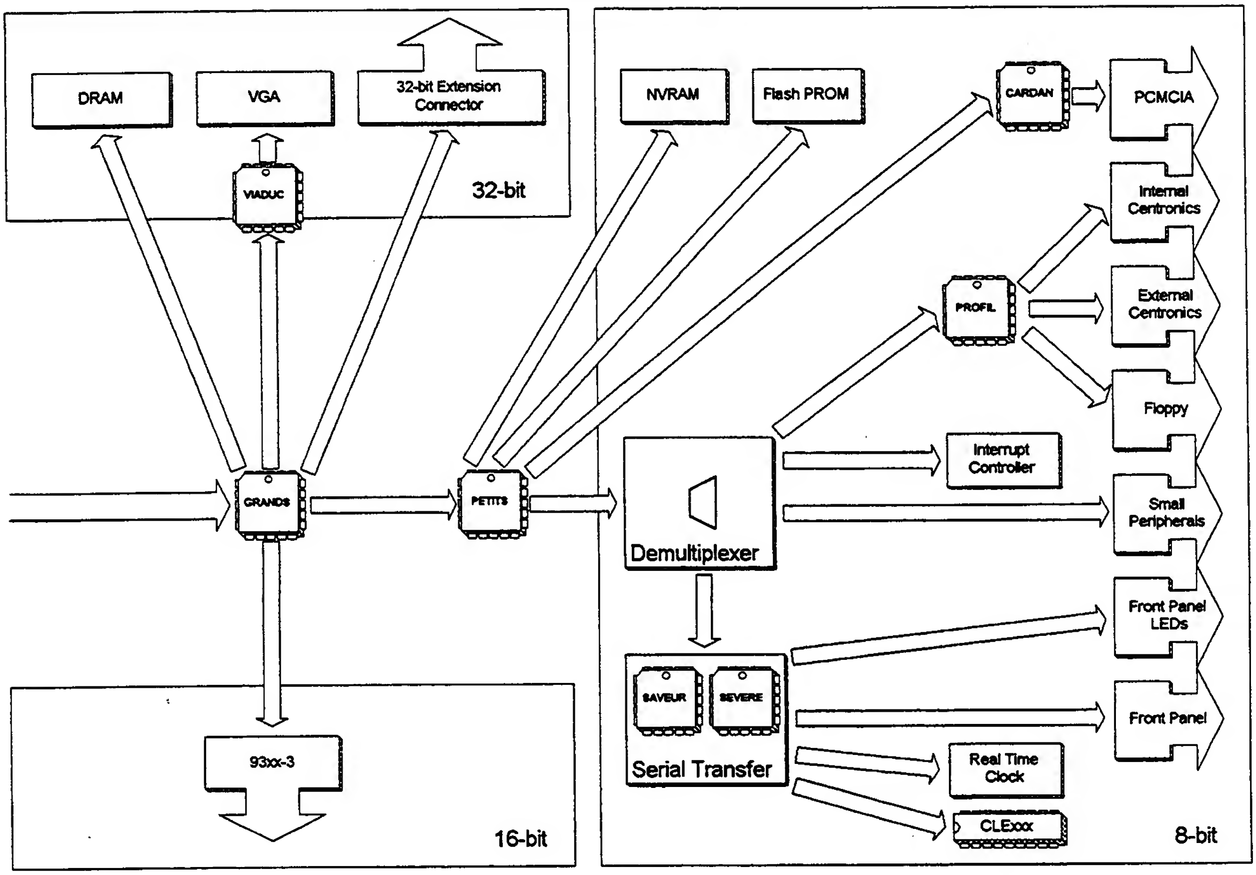


Fig 4-2 Peripheral Decoding and Data Bus Size

Not shown in Fig.4-2, are a few GALs for miscellaneous functions (like DRAM refreshing).
RASADE generates the RAS signals and the lower addresses for DRAM. It also supports the signals needed for interleaved burst mode.
OCCASE generates the CAS signals for DRAM.
RAMEUR is the main sequencer for the DRAM , and handles the access precharge and the refresh system.
BUDGET translates a 680x0 bus cycle into a PPC cycle, and handles fast cycles, like accesses to DRAM or VGA.
RETINE counts the wait states and generates a bus error if no response after too many (153) wait states. It also generates the system reset.
ASSISE decodes CPU space cycles and controls the bus sizer.

4.2 F9384-31 (900022) Main Board

4.2.1 Introduction

The board is divided into five sections :

- Microprocessor control.
- Front-end
- Trigger
- Analog to Digital Converter and memory
- Time base

4.2.2 Microprocessor Control

The microprocessor interface provides the address, data, and control interface for the microprocessor card plugged into connector J1. This is the only interface to the data acquired by the acquisition card. This interface is essentially identical to the 9354 and 9374 interface. The main power supplies provided on connector J2 are +/-15 volts, +/-6 volts, +/-5 volts, and +3.3 volts.

4.2.2.1 Data Bus Buffer

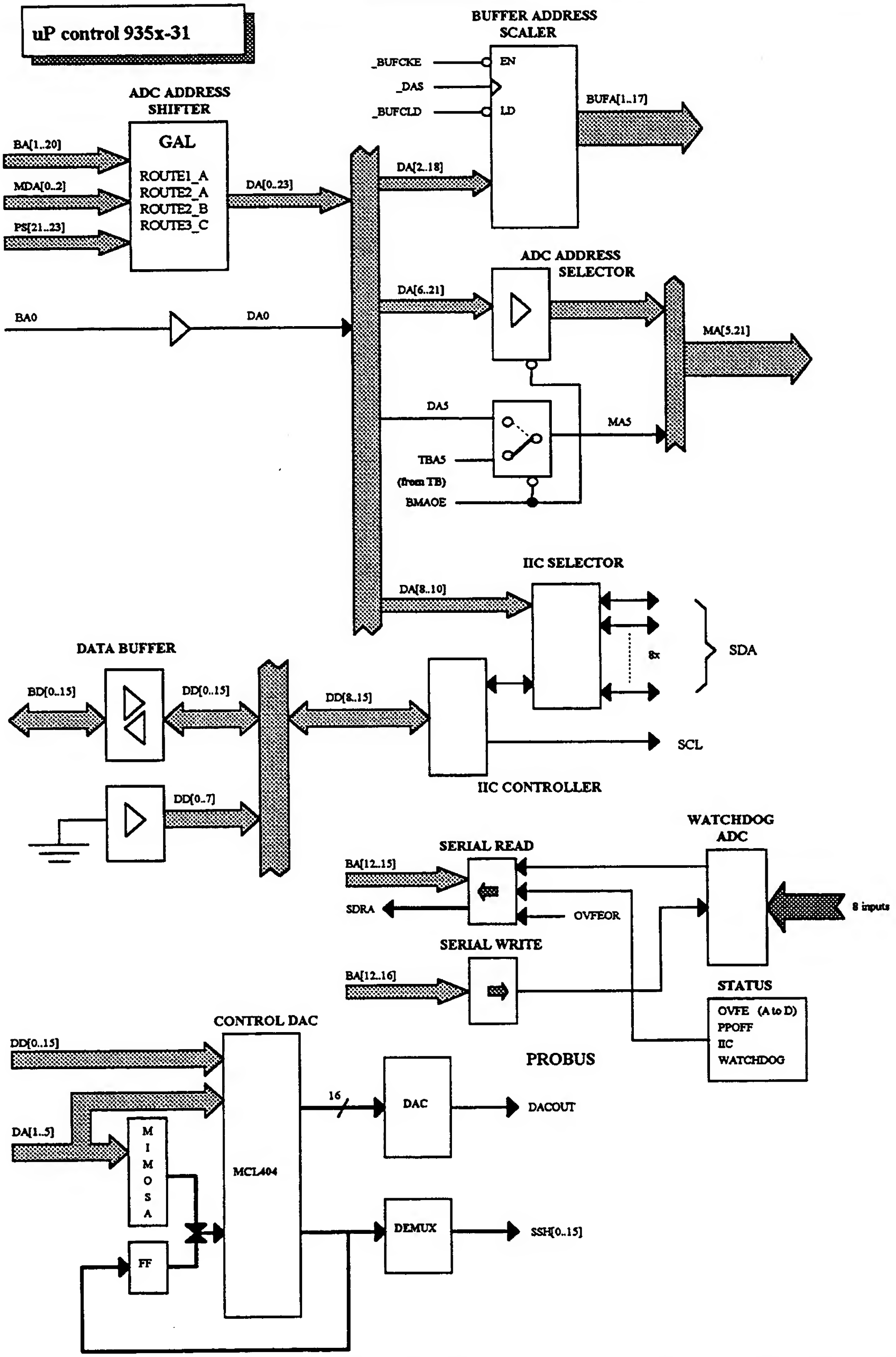
The data bus BD(0:15) from the microprocessor is buffered by A12 and A14 to unload the microprocessor bus from the extended bus DD(0:15) on the acquisition card. There is a one to one mapping of the two busses. All data flows through this bi-directional bus buffer. An additional eight bit buffer (A27) provides zero fill for the least significant eight bits of the bus when the processor reads data from the acquisition or buffer memory.

Bus	Bus name	Description
BD(0:15)	Data bus	Microprocessor data bus, bi-directional
DD(0:15)	Internal data bus	Internal buffered microprocessor data bus, bi-directional

4.2.2.2 ADC Address Shifter

Four GAL16V8's, ROUTE1-A, ROUTE2-A, ROUTE2-B, and ROUTE3-C shift and buffer the address bus BA(0:31) from the microprocessor. The shifted address bus DA(0:31) is used to read the data from the acquisition memory and the buffer memory.

Data from the four acquisition channels are not written into the acquisition memory in a linear sequential fashion. For example, when interleaving channel 1 and channel 2 for a sample rate of 2 Gs/S, channel 1 acquisition memory has the first sample point and channel 2 has the second sample point, these must be read in the correct time sequence to the microprocessor. The address bus shifter is programmed to read the first sample point from channel 1 and the second from channel 2, etc. Similarly, when 4 Gs/S is selected, one sample from each channel is read in the correct time sequence for the microprocessor



Each channel also interleaves two ADC's to sample at 1 Gs/S. At this sample rate two demultiplexers write sample points to memory in a non time ordered sequence. The address shifter must shift the microprocessor address bus to read the sample points in the correct time sequence.

Bus	Bus name	Description
BA(0:31)	Address bus	Address bus from the microprocessor
DA(0:31)	Shifted address bus	Acquisition memory bus and when selected, the buffer memory address bus

4.2.2.3 Buffer Address Scalar

Acquisition memory is off-loaded to the buffer memory via the MDX622 demultiplexers for direct access by the microprocessor. The buffer memory is sequentially addressed via the address bus BUFA(1:17) by the buffer address scalar, a seventeen bit counter. The buffer address scalar can be loaded with an address pointing to the start of data, then sequential address strobes from the microprocessor increments the scalar, sequentially addressing the buffer memory and writing waveform data. Meanwhile the address shifter reads the waveform data from the acquisition memory in the correct time sequence.

Bus	Bus name	Description
BUFA(1:17)	Buffer address bus	Address bus for the buffer memory which stores a portion of the acquisition memory data.

4.2.2.4 ADC Address Selector

After the acquisition memory is filled by the waveform data, the buffer address scalar is loaded with the starting address for the buffer memory and the shifted address bus is connected to the acquisition memory address bus MA(5:22) with the ADC address selector. (NOTE: During acquisition, the monolithic timebase, MTB411, provides the memory addresses.) Sequential addresses from the microprocessor address the acquisition memory and increment the buffer address scalar, moving the waveform data from the acquisition memory to the microprocessor card. The buffer memory snoops the data and saves the waveform data from the acquisition memory in the local buffer memory. Subsequent accesses to the waveform data by the microprocessor can come from the buffer memory instead of the acquisition memory. The buffer memory stores only 128k samples, one eigth of the samples stored in the acquisition memory. At memory sizes above this value, double buffering in the buffer memory is of little use.

Notice that the buffered sample points are in the correct time sequence for single channel operation. However, when two or four channels are interleaved, the address shifter must be used to read the data from the buffer memory in the correct time sequence for the microprocessor.

Bus	Bus name	Description
MA(5:22)	Memory address	High speed acquisition memory address bus

4.2.2.5 Decode Logic

A programmable device, GAL16V8, called AVENUE-A decodes the upper address bits of the microprocessor address bus to generate the signals shown below.

AVENUE-A	
SPER0, SPER1	select peripheral group
PS21, PS22, PS23	pseudo address output for the address shifter
_EBA	select card
_SMDX	select MDX

Two more GAL16V8's (CHEMIN-A and ARTERE-A) use the output of AVENUE-A, part of the shifted address bus (DA(0:31)), and the microprocessor signals _BAS and _BR_W to write and read the acquisition memory and buffer memory.

The decoded signals of these two decoders are:

CHEMIN-A	
_BUFCLD, _BUFCKE	buffer scalar command output
_WEBUFH, _WEBUFL, _BUWALL	buffer memory command output
_EADR_AB, _EADR_CD, DIOE	ADC command
ARTERE-A	
_EZERO, EADCW	driver command
_SADCM, _ADCOE1, _ADCOE2	ADC memory command output
_WE_AB, _WE_CD	ADC write output
_REBUF	buffer READ output

Another GAL16V8 (MIMOSA-A) is the state machine for the scanning DAC.

The following table is the memory map for the F9384-31 card.

ADC memories (0200 0000 - 0200 FFFF) 16MB			
0200 0000	021F FFFF	ADC memory ch. A 1MP	2MB
	023F FFFF	ADC memory ch. A 2MP	4MB
0220 0000	0227 FFFF	BUF memory ch. A 256kP	512kB
0240 0000	025F FFFF	ADC memory ch. B 1MP	2MB
	027F FFFF	ADC memory ch. B 2MP	4MB
0260 0000	0267 FFFF	BUF memory ch. B 256kP	512kB
0280 0000	029F FFFF	ADC memory ch. C 1MP	2MB
	02BF FFFF	ADC memory ch. C 2MP	4MB
02A0 0000	02A7 FFFF	BUF memory ch. C 256kP	512kB

02C0 0000	02DF FFFF	ADC memory ch. D 1MP	2MB
	02FF FFFF	ADC memory ch. D 2MP	4MB
02E0 0000	02E7 FFFF	BUF memory ch. D 256kP	512kB
Small peripherals (0300 0000 - 033F FFFF) 4MB			
0300 0000	0300 0062	MCL404 Multiplexed DAC	2*36B
0308 0000	0308 0N02	Smart probe IIC controller	xB
0310 0000	0310 000E	MDX416 Data demux ch. A	4B
0314 0000	0314 000E	MDX416 Data demux ch. B	4B
0318 0000	0318 000E	MDX416 Data demux ch. C	4B
031C 0000	031C 000E	MDX416 Data demux ch. D	4B
	031F FFFF	spare	
0320 0000	0320 0005	MST412 Smart trigger	6B
0320 0006	0320 0007	Mode control / status	2B
	032F FFFF	spare	
0330 0000	0330 003F	MTB411 Timebase	64B
Extended buffer memories (0300 0000 - 033F FFFF) 4MB			
0340 0000	0347 FFFF	BUF memory ch. A 2x128kB	512kB
0350 0000	0357 FFFF	BUF memory ch. B 2x128kB	512kB
0360 0000	0367 FFFF	BUF memory ch. C 2x128kB	512kB
0370 0000	0377 FFFF	BUF memory ch. D 2x128kB	512kB
Spare (0380 0000 - 03FF FFFF) 8MB			
0380 0000	03FF FFFF	spare	12MB

4.2.2.6 Serial, Watchdog ADC, Overload, and IIC Control

The microprocessor card provides the serial clock SCKA, write data SDWA, and strobe STRA for the serial data stream that programs most of the DAC's and registers. It reads back the serial data via SDRA. Two decoders (A4 and A10) provide 13 write strobes, generated by STRA. The data is shifted in from the microprocessor to all of the serial DAC's and registers but only the intended DAC's or registers are strobed by the write strobe.

The LC574A has controls for the gain of each flash and delay and offset of each S/H for each channel, a total of six DAC's per channel. These DACs are provided by three octal 8-bit DACs.

The watchdog ADC monitors probe attenuation, calibration voltage, and VCCADC and generates an interrupt when any monitored voltage is outside of the valid range. Attaching a probe to the input of the scope changes the monitored voltage and alerts the microprocessor that a new probe is connected. The probe is interrogated by the microprocessor to determine the type of probe.

An overload condition at any of the 50 ohm inputs generates an interrupt to the microprocessor. The microprocessor reads the status register to determine which of the 8 possible overload conditions caused the interrupt.

The probus connectors are controlled by the IIC controller and IIC selector. IIC is a two wire serial bus used to control the probus probes. The controller controls the four input channels, external trigger input, probe cal, an EEPROM, and another input.

4.2.2.7 Scanning DAC

The scanning DAC is an 18 channel 16 bit DAC for use where precision and resolution are needed in the analog circuits. The DAC output range is +/-10 volts. It has its own reference and is not trimmed for gain or offset.

The MCL404 is a controller chip for the scanning DAC subsystem. Eighteen sample and hold circuits can be updated periodically with the MCL404. The MCL404 sequentially enables each of the sample and hold circuits. A precision 16 bit DAC provides the input to the sample and hold circuits through an analog multiplexer also controlled by the MCL404. The MCL404 has eighteen internal 16 bit registers for the eighteen sample and hold circuits.

Each frontend channel has a gain, offset, and trigger level sample and hold. External trigger level is connected to one sample and hold. Probe calibrate also uses one of the sample and hold outputs.

The scanning DAC is not used to calibrate the S/H and flash gain, offset, and delay. These are independent DAC's near each acquisition hybrid.

4.2.2.8 Power Supply Connector

The power supply provides +/-15 volts, +/-6 volts, +/-5 volts, +3.3 volts, -2 volts and line. All voltages except for line appear at connector J2. Line appears on connector J4. Line is a TTL compatible square wave synchronized to the ac power supplying the instrument.

4.2.3 Front End

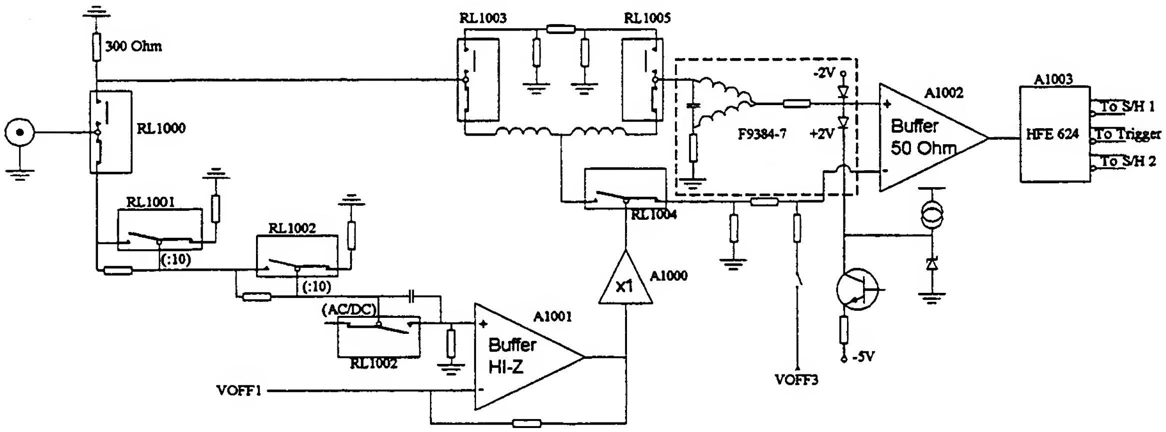
The front end system provides the signal conditioning for the ADC system.
The main functions are :

- four channel operation, calibration with software control
- input protection and coupling : AC, DC, 1 MΩ, 50 Ω
- amplitude normalisation for the ADC system : 320 mV full scale
- fine gain control
- offset control
- bandwidth limit filter : BWL 25 MHz or 200 MHz user selctable
- triggering with standard coupling and TV trigger on four channels and External

Six power supplies are generated from +/-15 volts and +/-6 volts for use in the frontend. These are: +/-12VFEP, +/-12VFE, and +/-5VFE. A reference supply VREF at 5 volts is generated by an SMLM336-5 from +12VFE.

4.2.3.1 Channel Description

The four channels are identical, thus only one channel will be described for brevity.



Attenuation/Coupling Stage

- Relay RL1000 selects the input between the **HiZ** (1 MΩ) and the 50 Ω path. A diode circuit senses the temperature of the 300 Ω termination and sets the _OVL bit low if overheating is detected. If overload is detected the 50 Ω path is then disconnected by the hardware and the 1 Mohm input is switched in.
- Relay RL1001 selects the input between divide-by-10 or direct for the signal in the **HiZ** path.
- Relay RL1002 selects another divide-by-10 or direct for the signal in the **HiZ** path
- Relay RL1003 selects the input between another divide-by-10 or direct for the signal in the 50 Ω path.
- Relay RL1004 enables the **HiZ output** (selection between 1MΩ output & offset for 50 Ω buffer).
- Relay RL1006 sets the AC/DC coupling in HiZ.
- Relay RL1007 selects the ouput between no attenuation in 50 Ω or HiZ (if RL5 is ON) to attenuate by 10 in 50 Ω.
- Switch SW1 (_Voff3) enable :This signal is only used for the calibration of the 50 Ω path when 1 MΩ coupling.

HFE624:

The HFE624 provides the following functions:

- Fine gain control to fill up the fixed vertical sensitivities with a 13:1 gain control range
- Bandwidth limit filter at 25 MHz and 200 MHz
- Three outputs, one for the trigger circuit and two for sample and hold input.
- Amplitude normalisation for the ADC system : at the BNC the dynamic range is 16 mV to 8V FS at 50 Ω and to 80V FS (full scale) at 1 MOhm in a 1-2-5 step sequence and the ADC system input is 500 mV differential,

4.2.3.2 Digital controls

The following controls are for the front end in the 9354. Note: Bits 16-23 are internal to the HFE624 and are written as a serial data stream.

0141 0z00 - 0141 0zff write channel A control register
0141 1z00 - 0141 1zff write channel B control register
0141 2z00 - 0141 2zff write channel C control register
0141 3z00 - 0141 3zff write channel D control register

23							16
---	ENc	ENb	ENa	G1	G0	BWL1	BWL0
15							8
RELSHA	:1 50	:10 50	:100 1M	:10 1M	AC/DC	1M	50
7							0
---	---	---	---	---	---	OF_BUF50	---

ENc : Enable MFE output C
ENb : Enable MFE output B
ENa : Enable MFE output A
G1,G0 : Gain range; 0 = range*1, 1 = range*2, 3 = range*5
BWL1,BWL0 : Bandwidth limit; 0 = off, 1 = 200 MHz, 2 = 20 MHz
RELSHA : 0 = direct, 1 = (A:BA, D:CD)
:1 50 : RL7; 1 = x0.1 and 1M calibration, 2 = x1
:10 50 : RL6; 1 = 50 Ohm calibration and 1mohm running
:100 1M : RL3; 1
:10 1M : RL2;
AC/DC : RL4; 0 = AC, 1 = DC
1M : RL5;
50 : RL1
OF_BUF50 : 0 = user mode, 1 = 1mohm calibration mode

0140 4z00 - 0140 4zff read channels overload (and option package availability)

7							0	LSB-1
_INTWD	_INTIIC	_OVL_T	PPOFF	_OVL_D	_OVL_C	_OVL_B	_OVL_A	OPT

_INTWD watchdog ADC interrupt,
_INTIICI2C protocol interrupt,
_PPOFF probe power overload interrupt,
_OVL_noverload indicator (Ch A, B, C, D, EXT).

OPT935XA-CKTRIG option package (9th bit of serial read).

A low state indicate that overload or interrupt is detected. Bit OPT is high when the options are available.

0140 5z00 - 0140 5zff read overload sum

OVLSUMbit 7, Sum of the eight above bits.
0 = OK, 1 = problem occurred (read channels overload)

4.2.3.3 Analog controls

- One precision DAC, with its associated control system, drives and refreshes a multiple sample-and-hold system. Each channel has three analog controls VOFF1_x, VOFF3_x and IVGAIN_x, where x refers to channel A, B, C, or D corresponding to channels 1, 2, 3, and 4. VOFF1_x is the offset control in 50 Ohm coupling,, VOFF3_x is used to control the offset of the 50 Ohm path when in 1 MOHm coupling and IVGAIN_x is used to calibrate the gain of the front end and perform the variable gain control.
- The DAC dynamic range (± 10V) is scaled to the proper range by means of resistor dividers.

The addresses are :

0300 0000	write channel A gain control
0300 0002	write channel A offset control
0300 0004	write channel B gain control
0300 0006	write channel B offset control
0300 0008	write channel C gain control
0300 000a	write channel C offset control
0300 000c	write channel D gain control
0300 000e	write channel D offset control

4.2.4 Trigger

The different trigger couplings are :

- DC
- AC : cut off frequency approximately 10 Hz.
- LF REJ: a single pole high pass filter with a cut off frequency at 50 kHz.
- HF REJ: a single pole low pass filter with a cut off frequency at 50 kHz.
- HF: divides the trigger frequency by two.

The amplitude at the input of the MTR408 is approximately 400 mV FS (identical to the ADC system),

4.2.4.1 Digital Controls

The 40 bit shift register, is allocated as follows :

0141 4z00 - 0141 4zff write trigger control register

39							32
—	TBWL_A	HFR_A	AC_A	DC_A	—	SNEG_A	SPOS_A
31							24
TEXT50	TBWL_B	HFR_B	AC_B	DC_B	—	SNEG_B	SPOS_B
23							16
—	TBWL_C	HFR_C	AC_C	DC_C	—	SNEG_C	SPOS_C
15							8
—	TBWL_D	HFR_D	AC_D	DC_D	—	SNEG_D	SPOS_D
7							0
EXT/10	TBWL_EXT	HFR_EXT	AC_EXT	DC_EXT	—	SNEG_EXT	SPOS_EXT

TEXT50	0 = 1 MΩ external input coupling, 1 = 50 Ω external input coupling.
_EXT/10	0 = attenuation is ON, 1 = OFF.

4.2.4.2 Analog Controls

A sample and hold fed by the precision DAC provides the threshold level.

The addresses are :

0300 0010	write EXT threshold control
0300 0018	write channel A threshold control
0300 001a	write channel B threshold control
0300 001c	write channel C threshold control
0300 001e	write channel D threshold control

4.2.4.3 TV Trigger

Each channel has an analog pick-off for the tv trigger after the HFE624. The external trigger has a pickoff after the high impedance buffer. The TV trigger source is selected via the three bits of TVS and drives an amplifier with complementary outputs. These outputs are selected by _TVINV.
The TV trigger uses a commercial chip (LM1881) and provides two outputs,TV1 & TV2. This circuit is able to trigger on several different TV line number standards.

- **Digital Controls**

The 16 bit shift register, written using the serial protocol, is allocated as follows :

0141 5z00 - 0141 5zffwrite trigger TV and MST412 oscillator control register

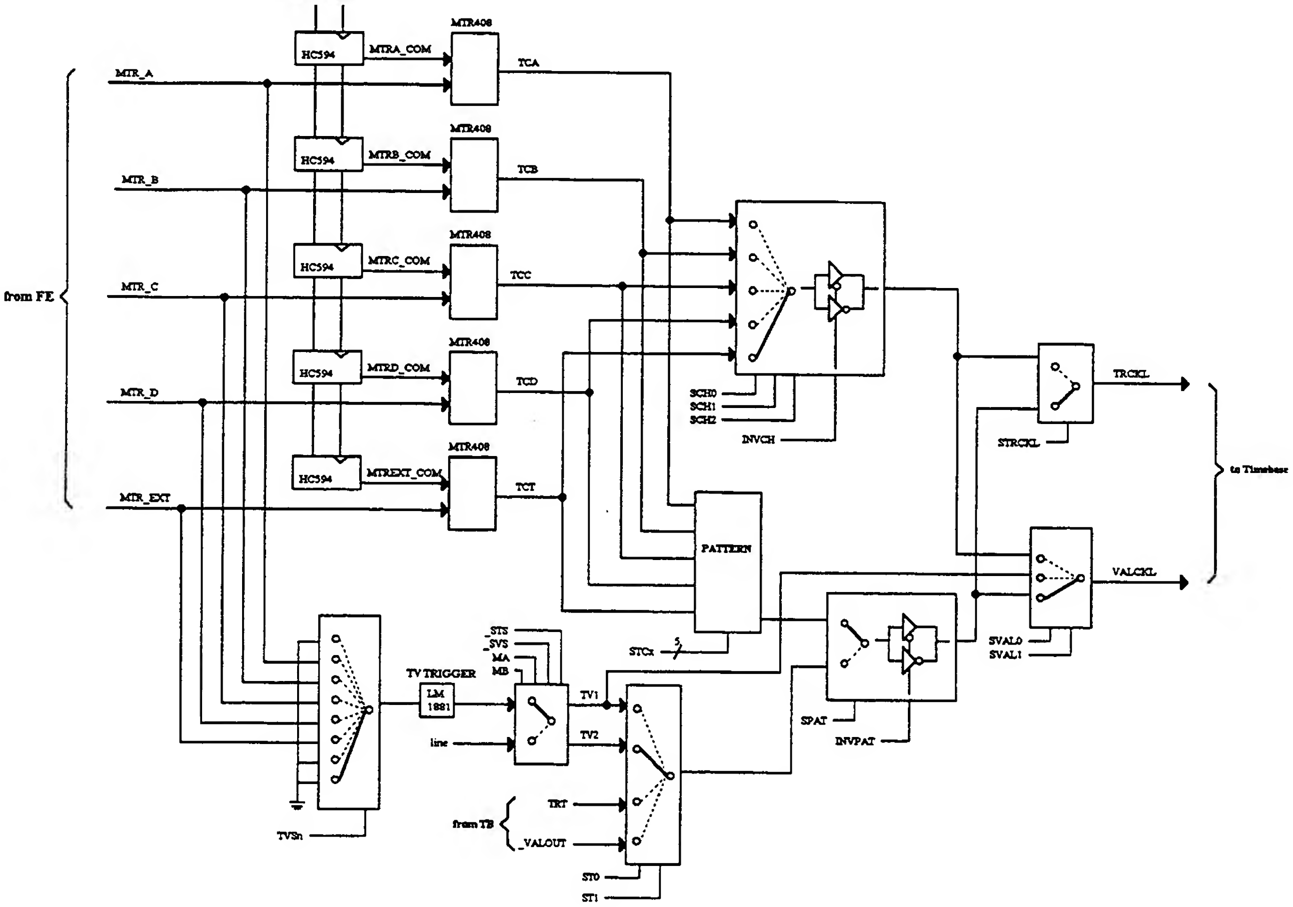
15							8
TVINV	TVS2	TVS1	TVS0	HDTV	875	MB	MA
7							0
STI	STW	SVS	STS	—	—	—	—

_TVINV	0 = inverting TV trigger (to compensate for inversion in MFE409).
_SVS	0 = enable TV1 source.
_STS	0 = enable TV2 source.
_STI	0 = enable interval width mode for MST412 oscillator control.
_STW	0 = enable pulse width mode for MST412 oscillator control.

TVS2	TVS1	TVS0	TV trigger source
0	0	1	channel A
0	1	0	channel B
0	1	1	channel C
1	0	0	channel D
1	0	1	external trigger

HDTV	875	line setting
0	0	525-625 TVLO
0	1	875 (MED)
1	0	1225 (HIGH)
1	1	2500 (HDTV)

4.2.4.4 Trigger Block Diagram



4.2.5 Analog to Digital Converter

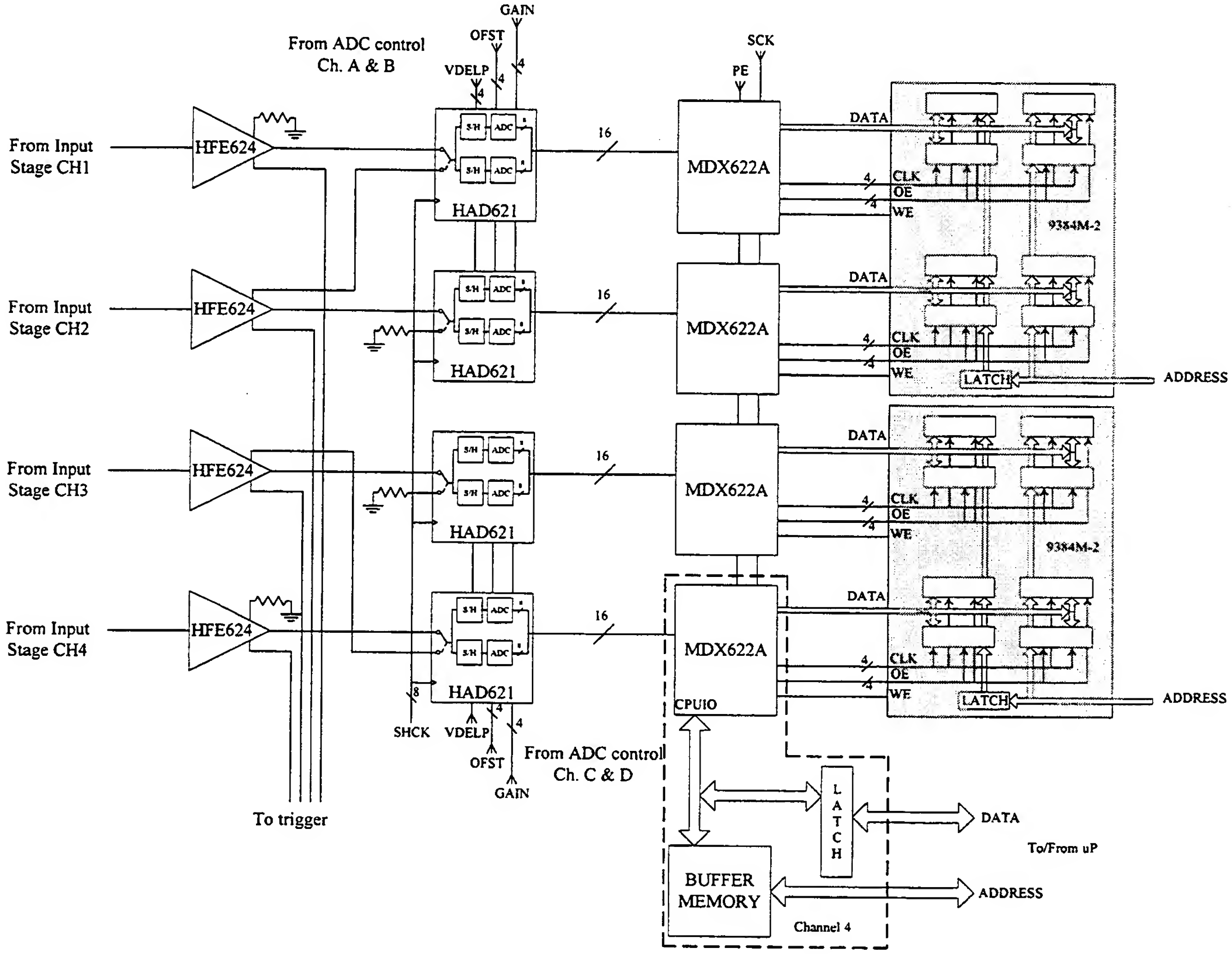
4.2.5.1 Introduction

The analog to digital converter system does the signal conversion to 8 bits. Each channel has a custom hybrid, HAD621, that contains two identical channels A and B consisting of a sample and hold, MSH417, and an ADC, TDA8718. Each hybrid is followed by a data demultiplexer, MDX622 and memory.

- Sample and Hold : the MSH417 with an analog bandwidth of 1GHz, performs the track and hold before the ADC. It is clocked at three different frequencies : 500 MHz, 400 MHz, and 200 MHz. The offset difference between the two channels in the HAD621 is adjusted by an 8 bit DAC.
- Flash ADC : the TDA8718 is a folding ADC working at a maximum clock speed of 500 MS/s. The gain difference between channels in the HAD621 is calibrated by adjusting the internal resistor ladder using an 8 bit DAC. The ADC input level is nominally 2 volts peak to peak.
- Demultiplexer : the MDX622 monolithic is used to demultiplex the ADC output for the slower memories and to peak detect the data on the fly.
- Buffer Memory : 128K bytes
- ADC Memory : 100 K for the LC574A, 500 K for the LC574AM and 2 M for the LC574AL. Memory length may be extended by combining the acquisition memories of multiple channels to a maximum of 8 Mpoints for one channel.

Any time two channels are interleaved to produce a higher sample rate, the timing between the S/H's must be precise. A square wave oscillator at a frequency of 15.5029 MHz provides the edge required to calibrate the timing. The square wave is injected into the 50 ohm signal path at the buffer driving the HFE624 and is used by the software to calibrate out this internal delay.

4.2.5.2 ADC/Memories Block Diagram



4.2.6 Time Base

4.2.6.1 Introduction

The main clock comes from a PLL oscillator that uses a precision 10 MHz reference. There is a control bit, SEXTREF, to select an optional external reference providing a 0 dbm signal level.

The PLL output frequency is controlled by three bits, SF500, SF400, and _SF200. One branch of the main clock, SHCK, is directly used by the sample-and-hold, the analog-to-digital converter and the time-to-digital converter for data acquisition. A differential ECL clock from each channel, called MCK, synchronizes the MDX622 data demultiplexer with the data from the ADC.

Another branch of the main clock, MDXCK, is routed to the time where the basic timing of the oscilloscope is generated. A programmable divider using a fast ECL first stage and a slower TTL second stage generate a signal called SAMPLE CLOCK. A second programmable ECL divider uses SAMPLE CLOCK to generate the timing signals for the MDX622 data demultiplexers, the time to digital converter, the trigger recognizer, and the MTB411 timebase.

The main clock can also be driven from the external trigger BNC, this path is selected by a control bit (SEXTCK). The external clock threshold can be modified by two bits from the time base mode control (EXTCTH1 and EXTCTH2). This external clock frequency range is 0 to 100 MHz. An optional rear panel input can drive the external clock to 500 MS/s.

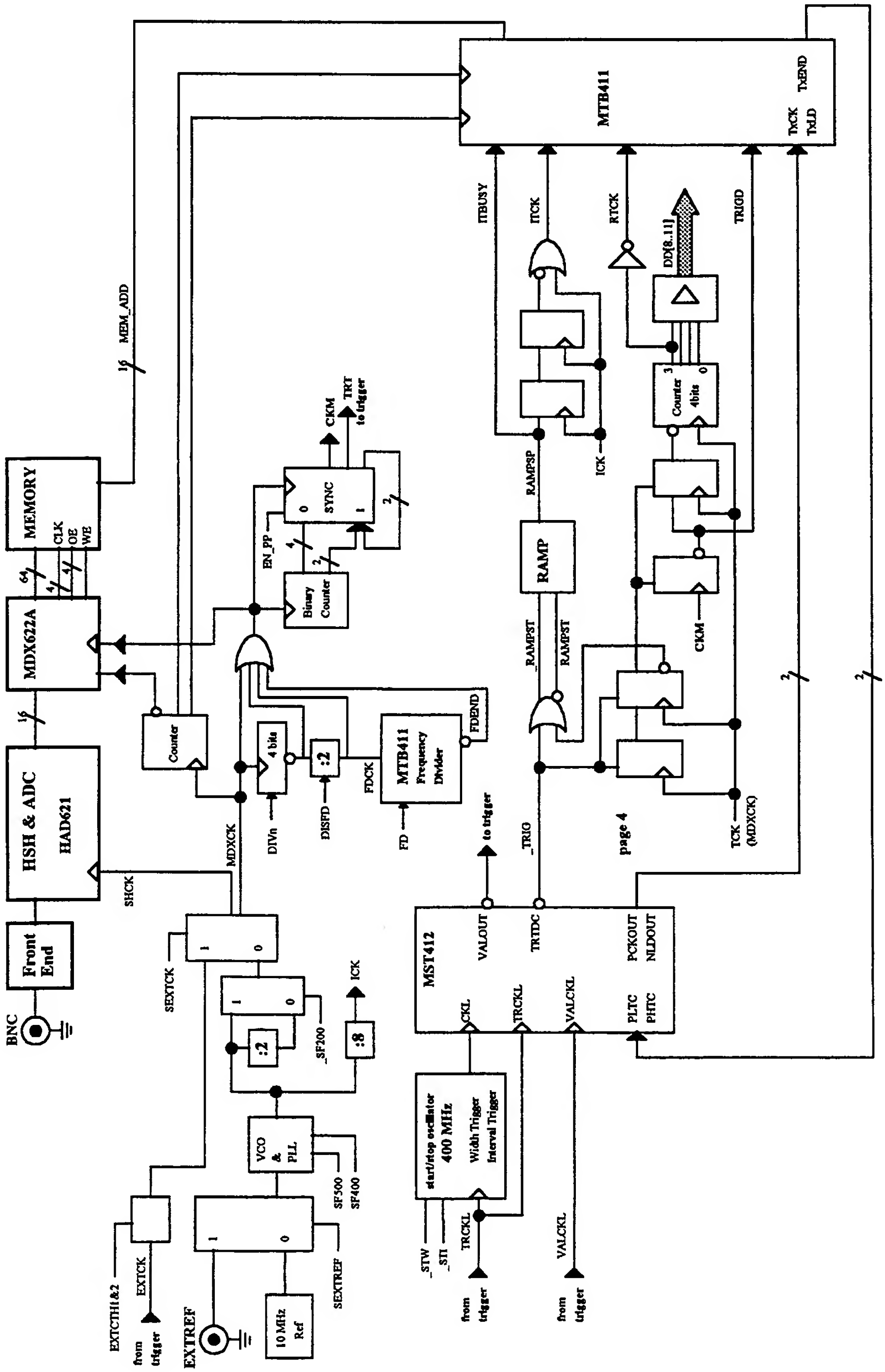
The PLL oscillator has in fact only two values, 500 and 400 MHz, the 200 MHz is a secondary path coming from a divide by two.

- 500 MHz is used for the fast timebase settings, 250 MS/s, 500 MS/s, 1 GS/s, 2 GS/s, 4 GS/s and RIS mode.
- 400 MHz is used for all other timebase settings including Roll mode.

The time to digital converter is a variation on the classic Wilkinson charge to time converter. The capacitor is charged by the time difference between the trigger and the main clock, while the discharge is controlled by a fixed current source approximately 0.001 times the charging current. The MTB411 counts a clock called ICK, which is 1/8 th. of the main clock, during the discharge part of the TDC. The value of the counter after the discharge cycle is proprotional to the time difference.

Another clock called TRT, derived from the main clock is used by the processor to calibrate the smart trigger.

4.2.6.2 Time Base Block Diagram



4.2.6.3 Digital Control

0141 8z00 - 0141 8zffwrite Time Base divider register

15							8
MDX_CNT7	MDX_CNT6	MDX_CNT5	MDX_CNT4	MDX_CNT3	MDX_CNT2	MDX_CNT1	SEXTREF
7							0
DISFD	_SF200	SF500	SF400	DIV3	DIV2	DIV1	DIV0

where :

SEXTREF	select optional external PLL clock reference (10 MHz ± 5 %).
DISFD	disable FD clock to MTB411.
_SF200	select oscillator frequency 200 MHz.
SF500	select oscillator frequency 500 MHz.
SF400	select oscillator frequency 400 MHz.
DIVn	frequency pre-divider (4 bits).
MDX_CNT1:7	master MDX622 divider.

4.2.6.4 Trigger Selection

Each differential output of the five MTR408's from the Front-End (TCx) are selected (bit SCHn) and then inverted (bit INVCH) to drive the TRCKL signal and the VALCKL signal (bit SVAL1).

A logical function of the TCx signals can be selected (bit STCx) for the pattern generator. A few single ended signals can also be selected one at a time (bit STn). These signals are TV1 and TV2 for television trigger, TRT for test and calibration of MST412, _VALOUT for drop-out trigger.

Then there is a selection between the pattern and the single ended sources (bit SPAT). The signal obtained is inverted (bit INVPAT) and used to drive TRCKL (bit STRCKL). There is also a choice between this signal and TV1 to drive VALCKL (bit SVAL0). The pattern trigger logic function is any "AND" combination of TCx input signals, inverted or not. All the controls are done through a 16 bit serial register.

4.2.6.5 Smart Trigger

The VALCKL source drives the MST412. The TRCKL source goes through a buffer to drive the MST412, the fast trigger latch, and control the smart trigger 400 MHz start/stop oscillator. The DC trigger coupling mode uses the fast trigger latch path for triggering to approximately 700 MHz. Selecting HF trigger coupling extends the trigger sensitivity to beyond 1 GHz.

The MST412 oscillator is usually free running, but when using glitch trigger mode, the oscillator is enabled only during the pulse duration (bit _STW), and when using interval width trigger mode the oscillator is restarted at each edge (bit _STI).
There is also a time base mode control register with roll mode interrupt enable (RMIE), external clock control (SEXTCK, EXTCTH1 and EXTCTH2), buzzer (BUZZ) and calibration front panel output signal selection (PCSn).

4.3 F9300-4 GPIB and RS 232 Interface

This board is connected to the processor through a flat cable.
Data bus is 8 bits, address bus: 12 bits.
Address 0180 000 to 0180 00FF.

4.3.1 RS 232 Serial Interface

Based on the 2661A IC from Signetics or Philips.

- Clock frequency 4.9152 MHz.
- RTC/CTS signals are connected
- DCD input is biased and the DTR output is not wired
- 4 internal registers of 8 bits.
- Interrupt level 2.
- Connector compatible with a DB9-P (9 pin male).

4.3.2 GPIB Interface

Based on the circuit 7210 IC from NEC.

- Clock frequency 4.9152 MHz.
- 8 internal registers of 8 bits.
- Tri-state external GPIB drivers. - Low level output.
- Interrupt level 3.

The GPIB address is set by software and stored in non-volatile memory.

4.4 FP9604 Front Panel

The front panel is connected to the processor board with a flat cable. Power supply and control signals are supplied from the processor. The front panel is divided in two sections:

- F9604-5 board with Motorola 68HC05C4 processor, encoders, and serial data interface.
- F9602-5 matrix keypad with push buttons.

4.5 F9300-7 Printer Controller Option

- Based on the Internal graphic printer LPT5446, and LPT5000 series control chip set from Seiko instrument Inc (Technical reference 39019-2234-01)
- PT501P01 CPU
- PT500GA1 Gate array
- Address 0130 0100
- Interrupt level 2

4.6 PSLC574 Power Supply

Line Voltage Autoranging

The LC574A oscilloscope operates from a 115 V (90 to 130 V) or 220 V (180 to 260 V) normal power source at 47 Hz to 63Hz. No voltage selection is required since the instrument automatically adapts to the line voltage which is present. The instrument operates at line frequencies up to 440 Hz.

4.6.1 Power Supply Specifications

Input voltage : 90 to 130 V or 180 to 260 V.
Auto ranging line voltage.

Input frequency : 47 Hz to 63 Hz.

Input rush current : Max. 40 A peak at start up.

Environmental : Operating temperature range 0 °C to + 50 °C
Storage temperature range - 55 °C to + 80 °C
Relative humidity from 5% to 95%.

Output voltages : - 5.2 VDC, 13 amp Max.
+ 5.2 VDC, 6 amp Max.
- 15.1 VDC, 3 amp Max
+ 15.1 VDC, 3 amp Max.
- 2.1 VDC, 10 amp Max.
+ 3.3 VDC, 3 amp Max.

Output adjustment : +/- 5%.
Regulation : +/- 1%.

Transient response : recover to 1% of its final value within 500 µsec.

Ripple and noise : Peak to peak value < 50 mV

Hold up time : 16 msec at full load

Output short circuit protection : Yes.

Output over voltage protection : Yes.

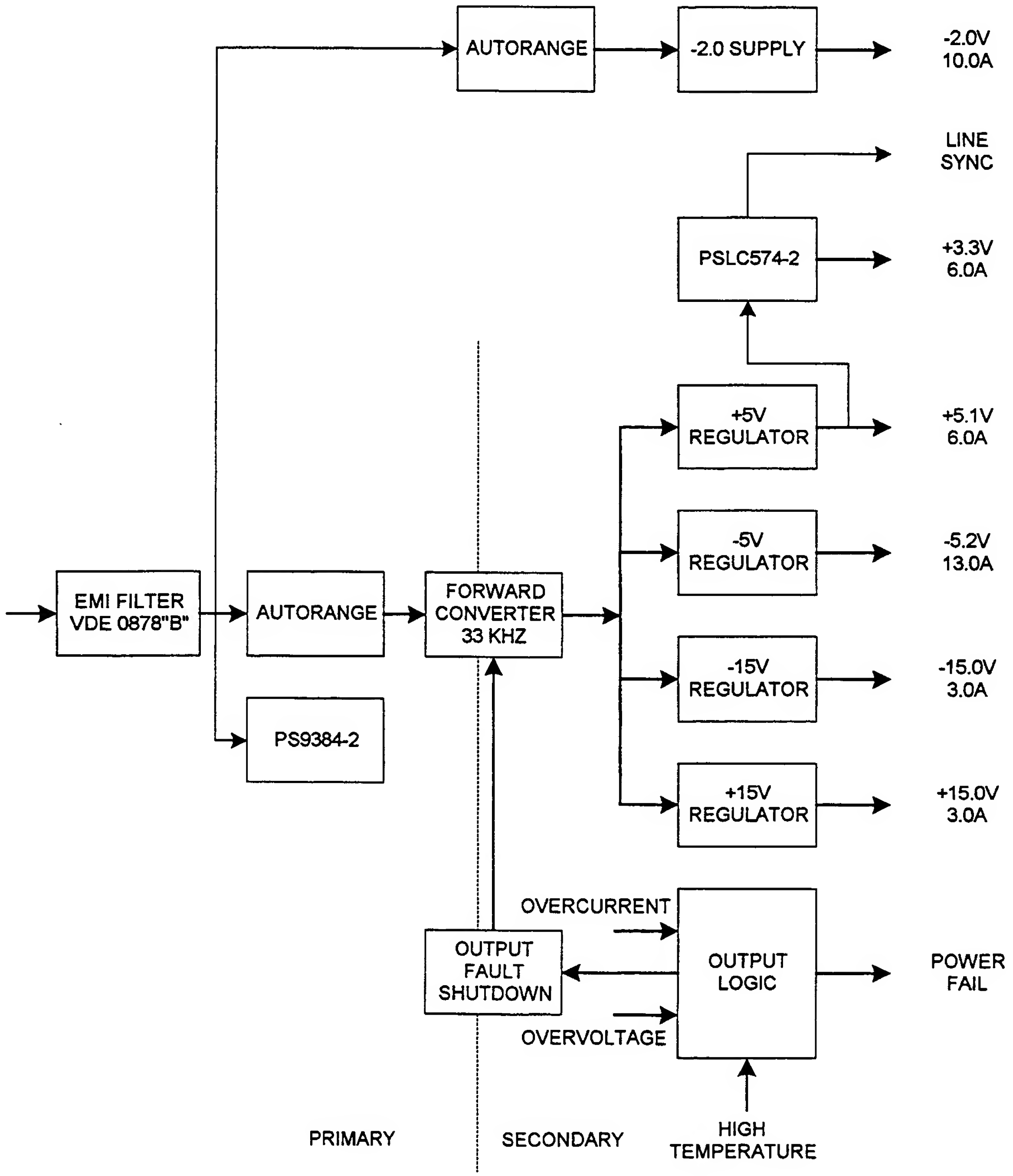
Input protection : 6 amp fuses.
Thermal protection : Yes.

Safety : VDE 0806, IEC 380, 435, 950 & UL1012, 478, CSAC22.2#1402C
EMI : VDE 0871 class A, FCC 20780 class A.

4.6.2 Power Supply Configurations

There are two different power supplies which may be present in the LC574A. They are the PSLC574 and the 900024. The 900024 has a fan on the front of the power supply while the PSLC574 does not. The presence of a fan is based on the type of fan used in the rear of the unit.

4.6.3 Power Supply Block Diagram



5. Performance Verification Procedures

5.1 Introduction

This chapter contains procedures suitable for determining if the LC574A Digital Storage Oscilloscope performs as warranted.
They check all the characteristics that are designated as specifications in subsection 5.1.1.

Because they require time and suitable test equipment, you may not need to perform all of these procedures, depending on what you want to accomplish.

In the absence of the computer automated calibration system based on LeCroy Calibration Software (LeCalsoft), this manual performance verification procedure can be followed to establish a traceable calibration.
It is the calibrating entities' responsibility to ensure that all laboratory standards used to perform this procedure are operating within their specifications and traceable to required standards if a traceable calibration certificate is to be issued for the LC574A Digital Storage Oscilloscope.

5.1.1 List of Specifications

The electrical specifications described in terms of quantifiable performance limits are listed in this subsection.

- Input Impedance
- Leakage Current
- Peak to Peak and RMS Average noise level
- Positive and Negative DC linearity
- Positive and Negative Offset
- Bandwidth
- Trigger Level
- Smart Trigger
- Time Base Accuracy
- Overshoot and Rise Time
- Overload

5.1.2 Calibration Cycle

The LC574A Digital Storage Oscilloscope requires periodic verification of performance. Under normal use (2,000 hours of use per year) and environmental conditions, this instrument should be calibrated once a year.

5.2 Test Equipment Required

These procedures use external, traceable signal generators, DC precision power supply, step generator and digital multimeter, to directly check specifications.

Instrument	Specifications	Recommended
Signal Generator Radio Frequency	Frequency : .5 MHz to 2 GHz Frequency Accuracy : 1 PPM	HP8648B or equivalent
Signal Generator Audio Frequency	Frequency : 0 to 5 KHz Amplitude : 8 V peak to peak	LeCroy LW420 or HP33120A or equivalent
Voltage Generator DC Power Supply	Range of 0 to 20 V, in steps of no more than 15 mV	HP6633A or equivalent
Step Generator Fast Pulser	Rise time 350ps ± 100 ps Overshoot 3.5 % ± 1 %	LeCroy 4969A + PB049 or equivalent
Power Meter + Sensor	Accuracy ±1 %	HP436A + 8482A or equivalent
Digital Multimeter Volt & Ohm	Voltmeter Accuracy : 0.1 % Ohmmeter Accuracy : 0.1 %	Keithley 2000 or equivalent
Adapter	50Ω to 1MΩ	LeCroy 4962-9
Adapter	4 GS/s, Single channel mode	LeCroy PP094
Coaxial Cable, 1 ns	50Ω, BNC, length 20 cm,	LeCroy 480232001
Coaxial Cable, 5 ns	50Ω, BNC, length 100 cm,	LeCroy 480020101
Attenuators, 20 dB	50Ω, BNC, 1 % accuracy, 2GHz	LeCroy 402200402
Terminator, 2 W	50Ω, BNC, Feed-Through	LeCroy 402323001
T adapter	50Ω, BNC T adapter	LeCroy 402222002

Table 5-1 : Test Equipment

5.2.1 Test Records

The last pages of this chapter contain LC574A test records in the format tables. Keep them as masters and use a photocopy for each calibration.

5.3 Turn On

If you are not familiar with operating the LC574A, read the operator's manual.

- Switch on the power using the power switch.
- Wait for about 10 minutes for the scope to reach a stable operating temperature, and verify :

* the display turns on after about 10 seconds and is stable.
* the range of intensity and grid intensity is reasonable.

5.4 Input Impedance

Specifications

DC 1.00 MΩ ±1 %
DC 50Ω ±1 %

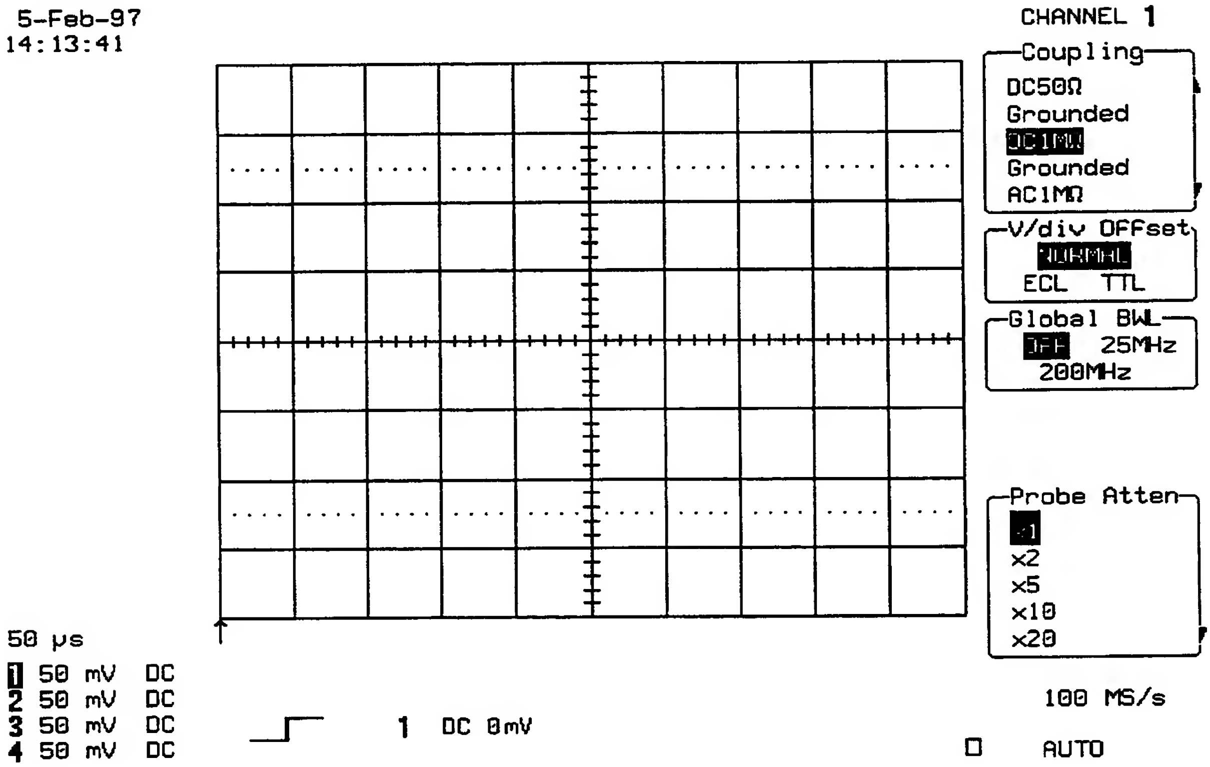
The impedance values for 50Ω, 1MΩ and Gnd couplings are measured with a high precision digital multimeter. The DMM is connected to the DSO in 4 wire configuration (input and sense), allowing for accurate measurements.

5.4.1 Channel Input Impedance

a. DC 1MΩ

- Recall **574p001.PNL** or configure the DSO :

Panel Setups : **Recall FROM DEFAULT SETUP**
Channels Trace OFF **Channel 1, Channel 2, Channel 3 & Channel 4**
Input Coupling : **DC 1MΩ on all 4 Channels**
Input gain : **50 mV/div. on all 4 Channels**
Time base : **50 µsec/div.**
Trigger mode : **Auto**

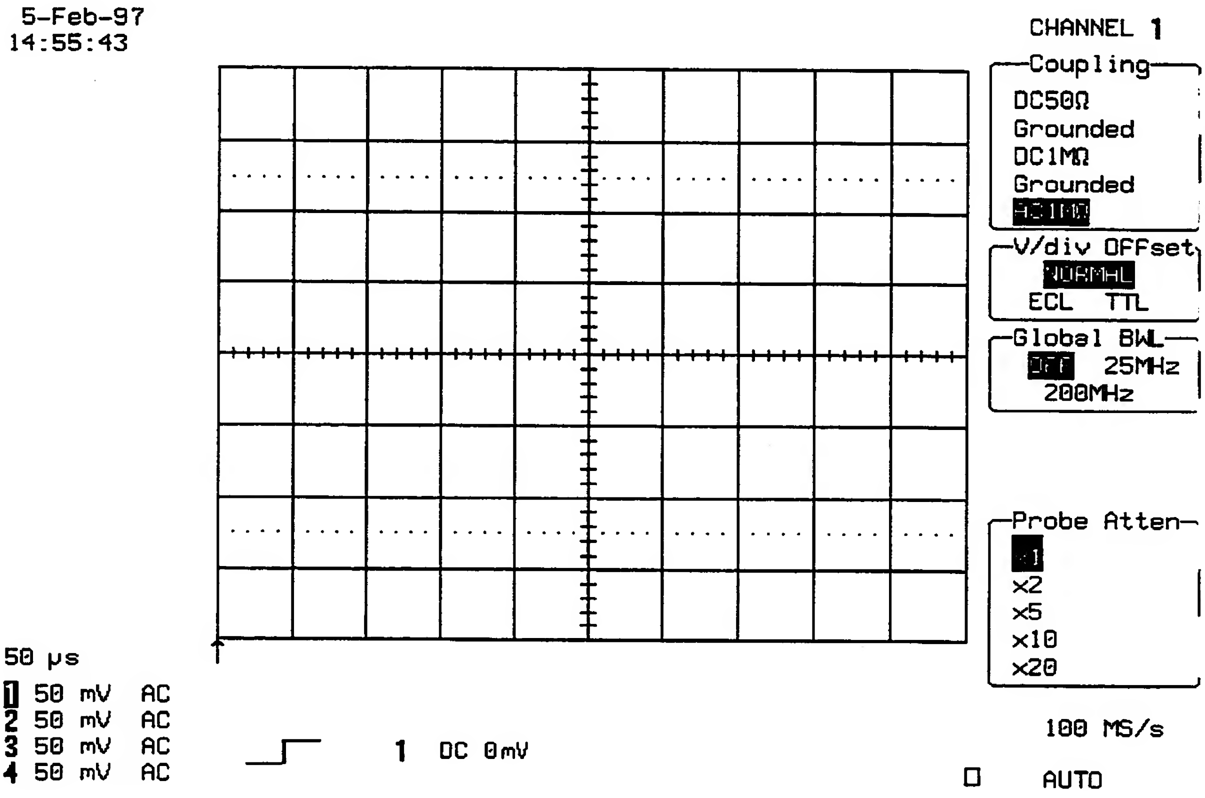


- Set the DMM with **Ohms and Ohms sense** to provide a 4 wire measurement.
- Connect it to Channel 1.
- Measure the **input impedance**. Record it in Table 2, and compare it to the limits.
- Repeat the above test for all input channels.
- Recall **574p002.PNL** or Set Input gain to **200 mV/div.** on all 4 Channels
- Repeat the test for all input channels.
- Record the measurements in Table 2, and compare the test results to the limits in the test record.

b. AC 1MΩ

- Recall **574p003.PNL** or configure the DSO as shown in 5.4.1.a, and for each Channel make the following change :

Input Coupling : **AC 1MΩ**



5-Feb-97
14:55:43

CHANNEL 1

Coupling
DC50Ω
Grounded
DC1MΩ
Grounded
AC1MΩ

V/div OFFset
NORMAL
ECL TTL

Global BWL
OFF 25MHz
200MHz

Probe Atten
x1
x2
x5
x10
x20

50 µs
1 50 mV AC
2 50 mV AC
3 50 mV AC
4 50 mV AC

1 DC 0mV

100 MS/s

☐ AUTO

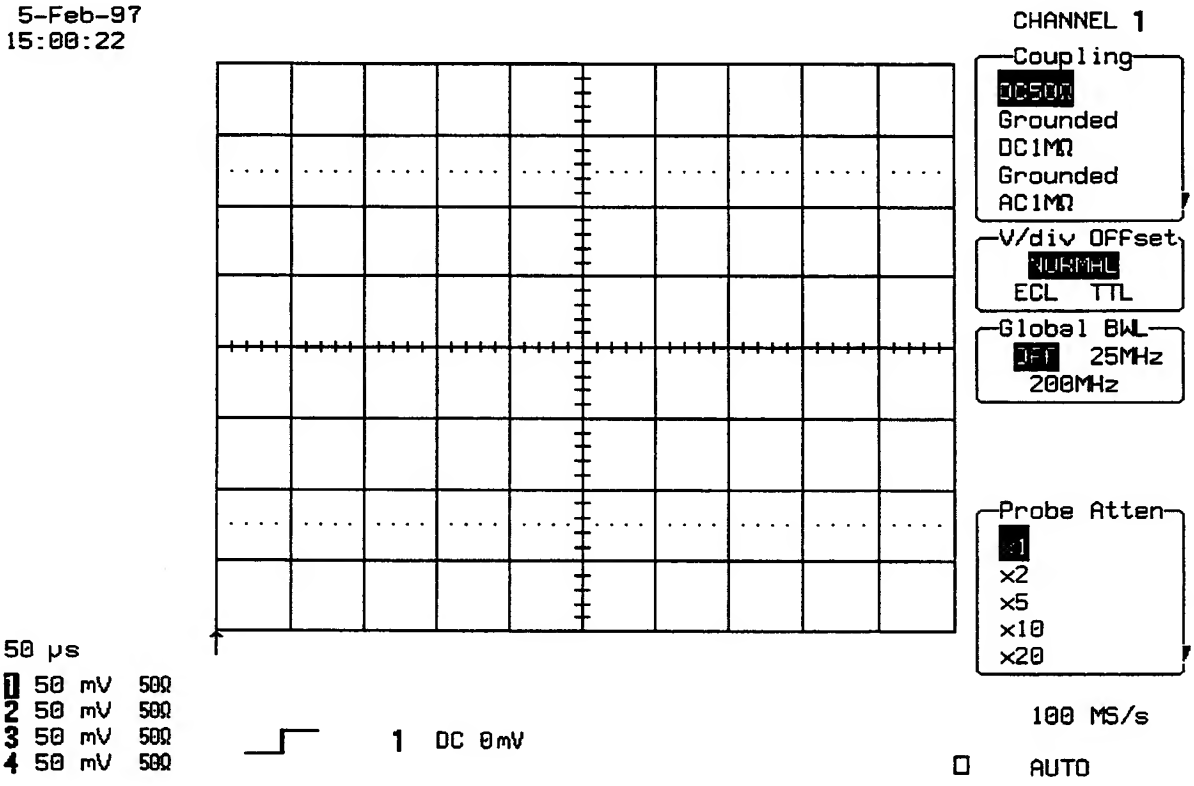
- For all input channels measure the **input impedance**.

- Record the input impedance in Table 2, and compare it to the limits.
- Recall **574p004.PNL** or Set Input gain to **200 mV/div** on all 4 Channels.
- Repeat the test for all input channels.
- Record the measurements in Table 2, and compare the results to the limits in the test record.

c. DC 50Ω

- Recall **574p005.PNL** or configure the DSO as shown in 5.4.1.a, and for each Channel make the following change:

Input Coupling : DC 50Ω



5-Feb-97
15:00:22

CHANNEL 1

Coupling: DC50Ω

V/div Offset: NORMAL

Global BWL: OFF

Probe Atten: x1

50 µs
1 50 mV 50Ω
2 50 mV 50Ω
3 50 mV 50Ω
4 50 mV 50Ω

1 DC 0mV

100 MS/s

AUTO

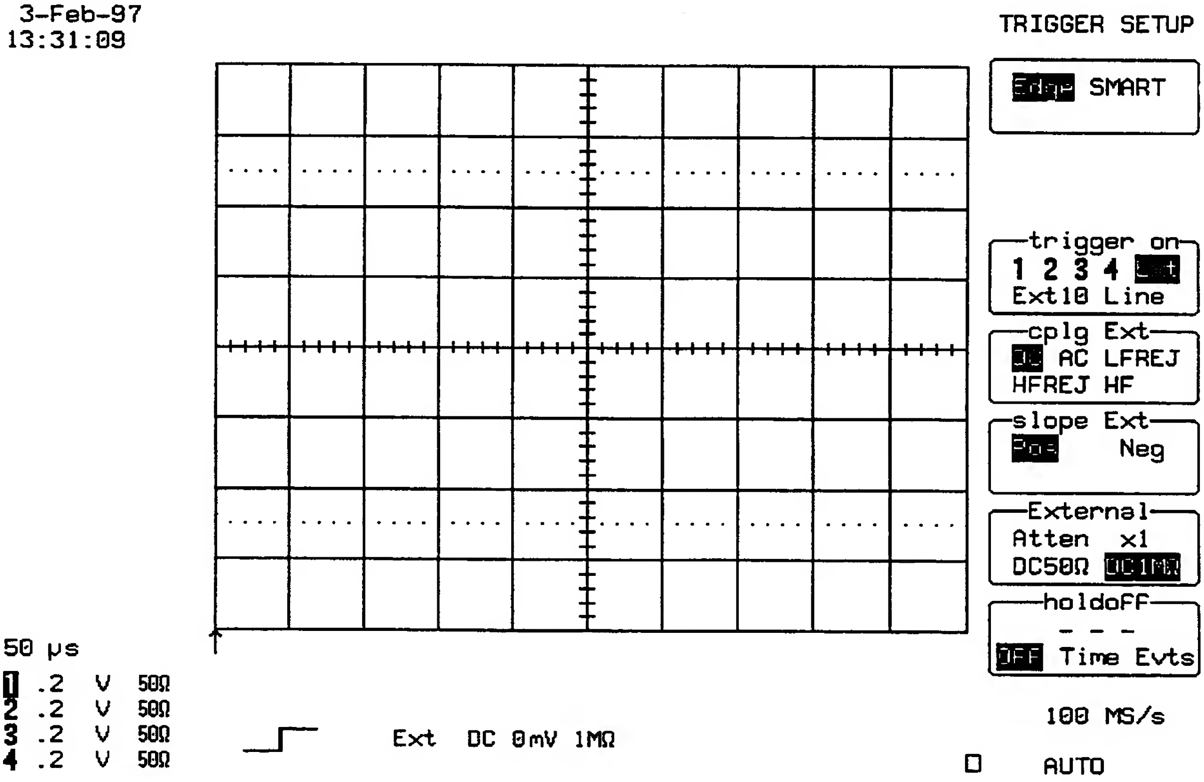
- For all input Channels, measure the input impedance.
- Record the **input impedance** in Table 2, and compare it to the limits.
- Recall **574p006.PNL** or set Input gain to **200 mV/div.** on all 4 Channels
- Repeat the test for all input channels. Record the measurements in Table 2, and compare the results to the limits in the test record.

5.4.2 External Trigger Input Impedance

a. DC 1MΩ

- Recall **574p007.PNL** or configure the DSO :

Set Trigger on	:	**EXT**
Trigger mode	:	**Auto**
Cplg Ext	:	**DC**
External	:	**DC 1MΩ**
Time base	:	**50 µsec/div.**



```
 3-Feb-97
13:31:09
```

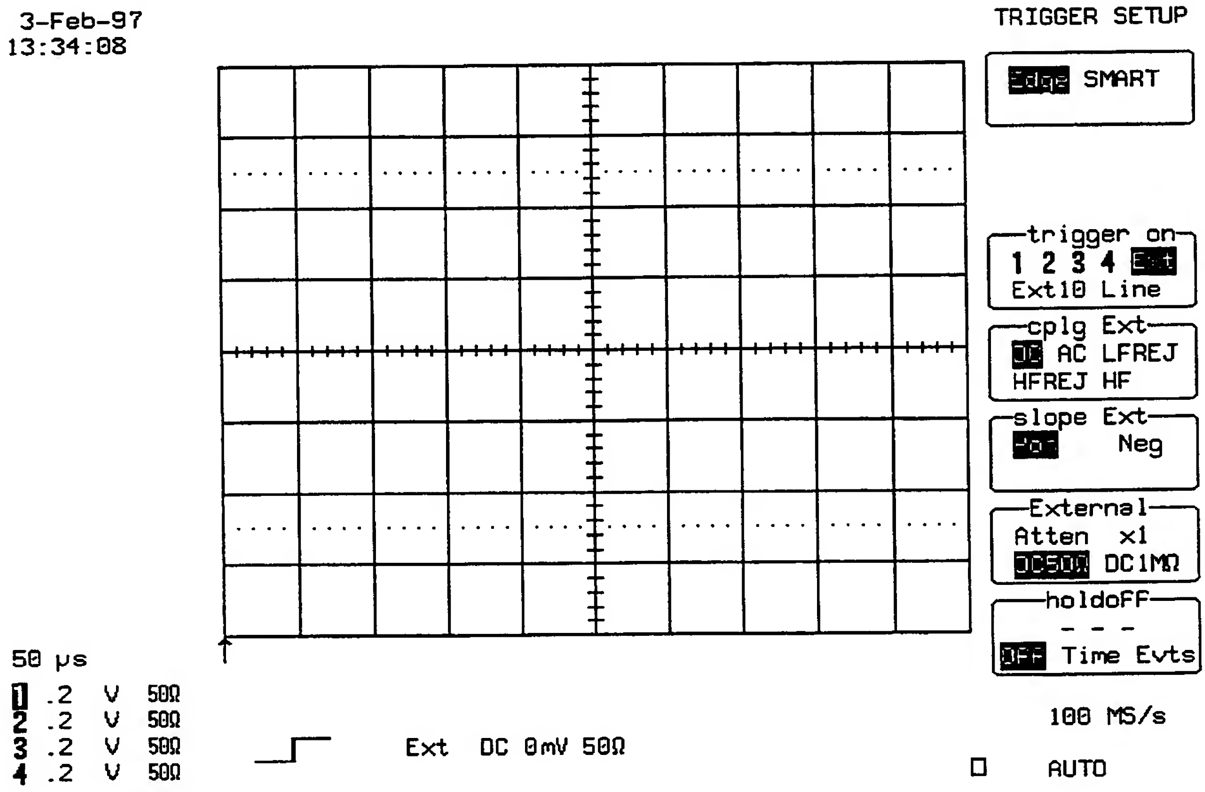
- Connect the DMM to External, and measure the **input impedance**.
- Record the input impedance in Table 2, and compare it to the limits.
- Recall **574p008.PNL** or set trigger to Ext/10
- Measure the **input impedance**.
- Record the test result in Table 2, and compare the result to the limits in the test record.

b. DC 50Ω

- Recall **574p009.PNL** or configure the DSO :

Trigger on : **EXT**

External : **DC 50Ω**



3-Feb-97
13:34:08

50 µs
1 .2 V 50Ω
2 .2 V 50Ω
3 .2 V 50Ω
4 .2 V 50Ω

Ext DC 0mV 50Ω

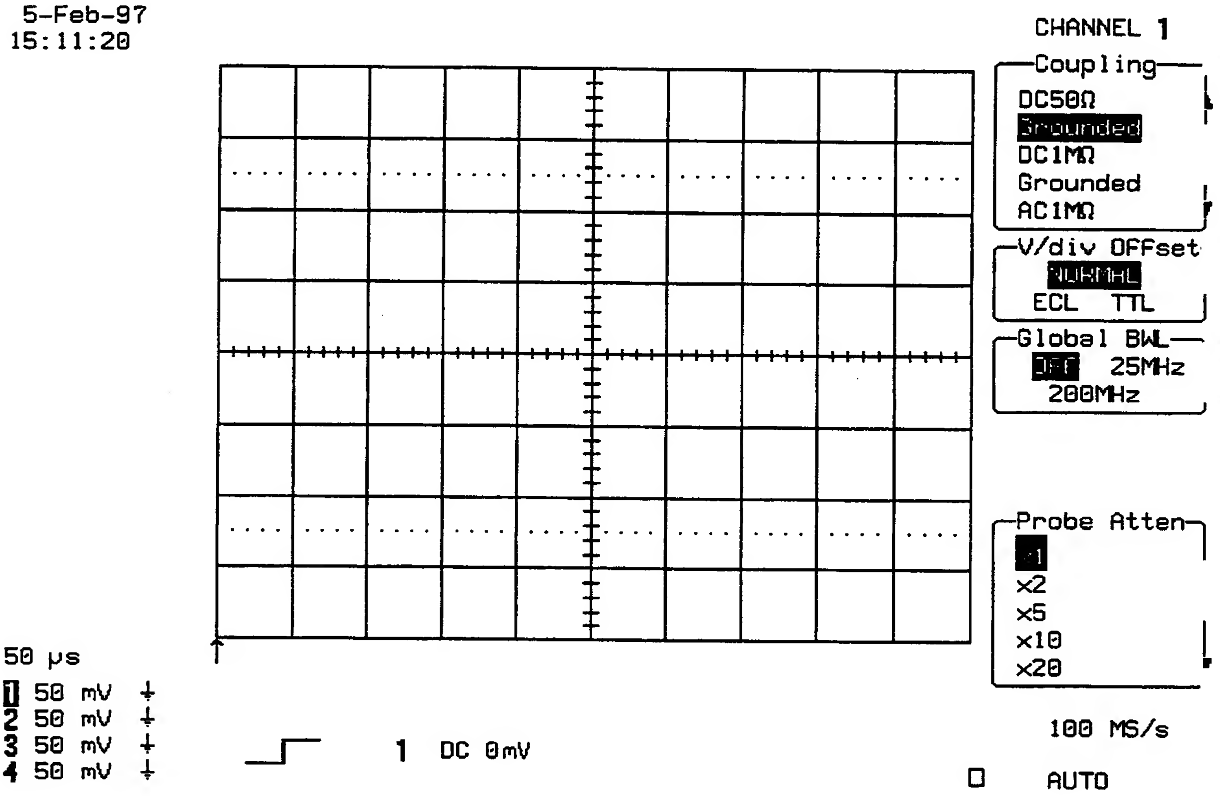
100 MS/s
AUTO

- Connect the DMM to External, and measure the **input impedance**.
- Record the input impedance in Table 2, and compare the result to the limit in the test record.

5.4.3 Ground

- Recall **574p010.PNL** or configure the DSO as shown in 5.4.1.a, and for each Channel make the following changes :

  Input Coupling : **Grounded**



5-Feb-97
15:11:20

CHANNEL 1

Coupling
DC50Ω
Grounded
DC1MΩ
Grounded
AC1MΩ

V/div OFFset
NORMAL
ECL TTL

Global BWL
OFF 25MHz
200MHz

Probe Atten
x1
x2
x5
x10
x20

50 µs
1 50 mV
2 50 mV
3 50 mV
4 50 mV

1 DC 0mV

100 MS/s

☐ AUTO

- Connect the DMM to Channel 1, and measure the **input impedance.**
- Record the input impedance in Table 2, and compare the result to the limit in the test record.
- Repeat the test for all input channels.
- Record the measurements in Table 2, and compare the results to the limits in the test record.

5.5 Leakage Current

Specifications

DC 1MΩ, AC 1MΩ, DC 50Ω : ±1 mV

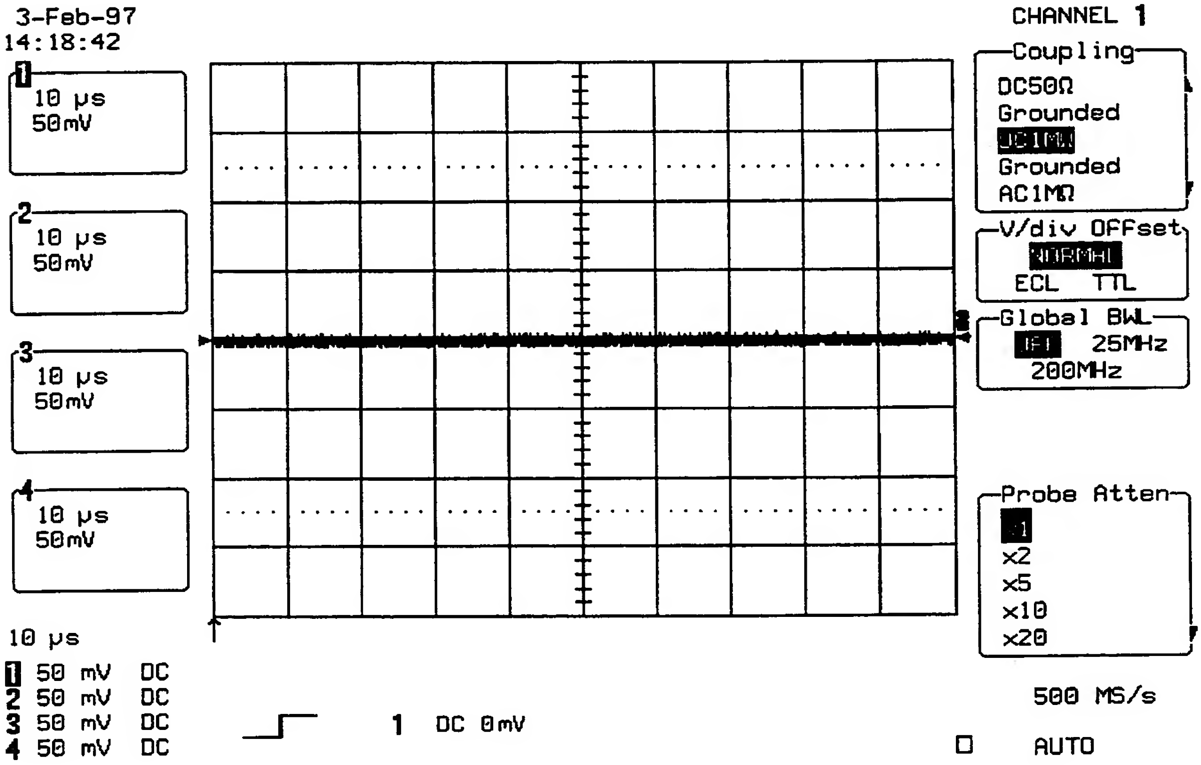
The leakage current is tested by measuring the voltage across the input channel.

5.5.1 Channel Leakage Current

a. DC 1MΩ

- Recall **574p011.PNL** or configure the DSO :

Panel Setups	:	**Recall FROM DEFAULT SETUP**
Channels Trace ON		**Channel 1, Channel 2, Channel 3 & Channel 4**
Input Coupling	:	**DC 1MΩ** on all 4 Channels
Input gain	:	**50 mV/div.** on all 4 Channels
Trigger mode	:	**Auto**
Time base	:	**10 µsec/div.**



3-Feb-97
14:18:42

1 10 µs 50mV
2 10 µs 50mV
3 10 µs 50mV
4 10 µs 50mV

10 µs
1 50 mV DC
2 50 mV DC
3 50 mV DC
4 50 mV DC

1 DC 0mV

CHANNEL 1
Coupling: DC50Ω, Grounded, **DC1MΩ**, Grounded, AC1MΩ
V/div OFFset: **NORMAL**, ECL, TTL
Global BWL: **OFF**, 25MHz, 200MHz
Probe Atten: **x1**, x2, x5, x10, x20

500 MS/s
AUTO

- Set the DMM to measure Volts, and connect it to Channel 1.
- Measure the **voltage** and enter it in Table 3. Compare it to the limits.

- Repeat the test for all input channels.
- Recall **574p012.PNL** or set Input gain to **200 mV/div.** on all 4 Channels
- Repeat the test for all input channels. Record the measurements in Table 3, and compare the results to the limits in the test record.

b. DC 50Ω

- Recall **574p013.PNL** or configure the DSO as shown in 5.5.1.a and for each Channel make the following changes :

  Set Input Coupling: **DC 50Ω**

- Connect the DMM to Channel 1.
- Measure the **voltage** and enter it in Table 3. Compare it to the limits.
- Recall **574p014.PNL** or set Input gain to **200 mV/div.** on all 4 Channels
- Repeat the test for all input channels.
- Record the measurements in Table 3, and compare the results to the limits in the test record.

5.5.2 External Trigger Leakage Current

a. DC 50Ω

- Recall **574p015.PNL** or configure the DSO as shown in 5.5.1.a and make the following changes :

  Set Trigger on : **EXT**

  External : **DC 50Ω**

- Connect the DMM to External.
- Measure the **voltage** and enter it in Table 3. Compare it to the limits.

5.6 Average Noise Level

Description

Noise tests with open inputs are executed on all channels for both 1MΩ and 50Ω input impedance, with AC and DC input coupling, 0 mV offset, at a gain setting of 10 mV/div., and different timebase settings.
The scope parameters functions are used to measure the Peak and RMS amplitude of the noise.

5.6.1 Peak to Peak Noise

Specifications

9 % of full scale or 7.2 mV Peak Peak at 10 mV/div.

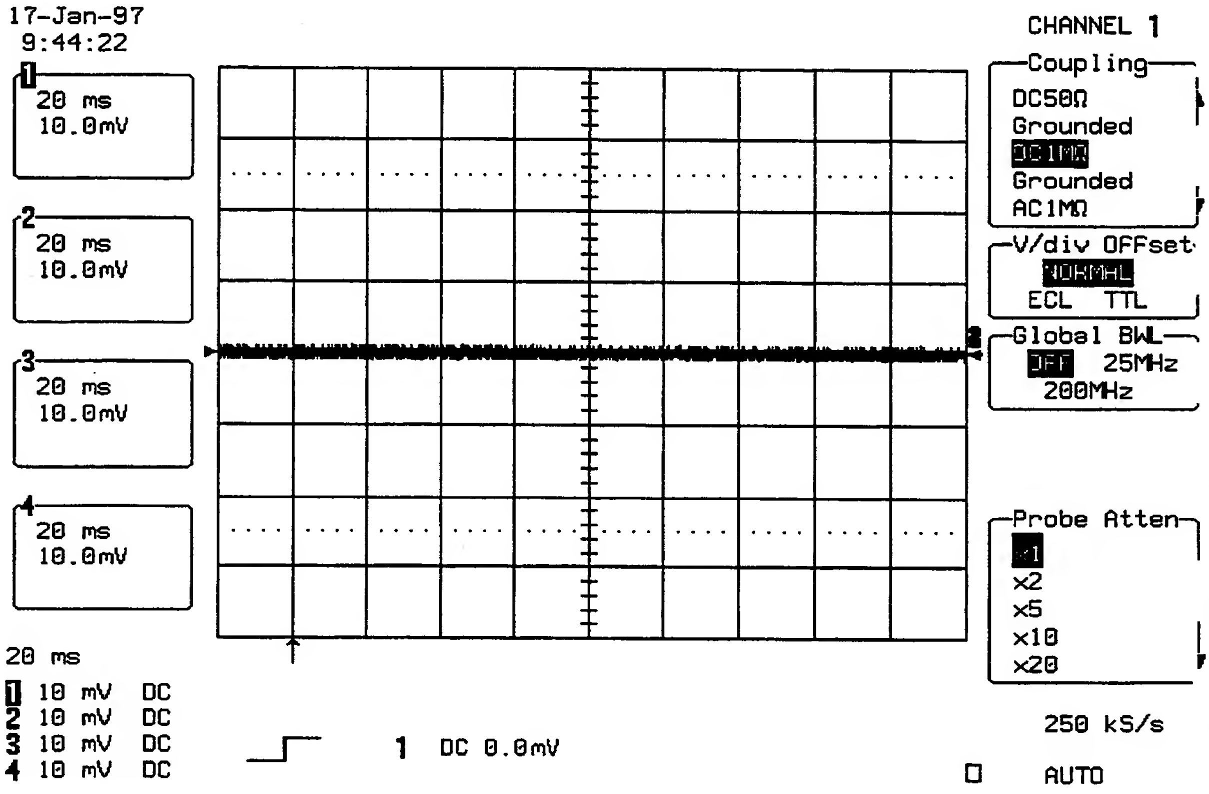
a. DC 1MΩ

With no signal connected to the inputs

- Recall **574p016.PNL** or configure the DSO :

Panel Setups : **Recall FROM DEFAULT SETUP**
Channels Trace ON **Channel 1, Channel 2, Channel 3 & Channel 4**
Input Coupling : **DC 1MΩ** on all 4 Channels
Input gain : **10 mV/div.** on all 4 Channels
Input offset : **0.0 mV** on all 4 Channels
Trigger setup : **Edge**
Trigger on : **1**
Coupling 1 : **DC**
Trigger Mode : **Auto**

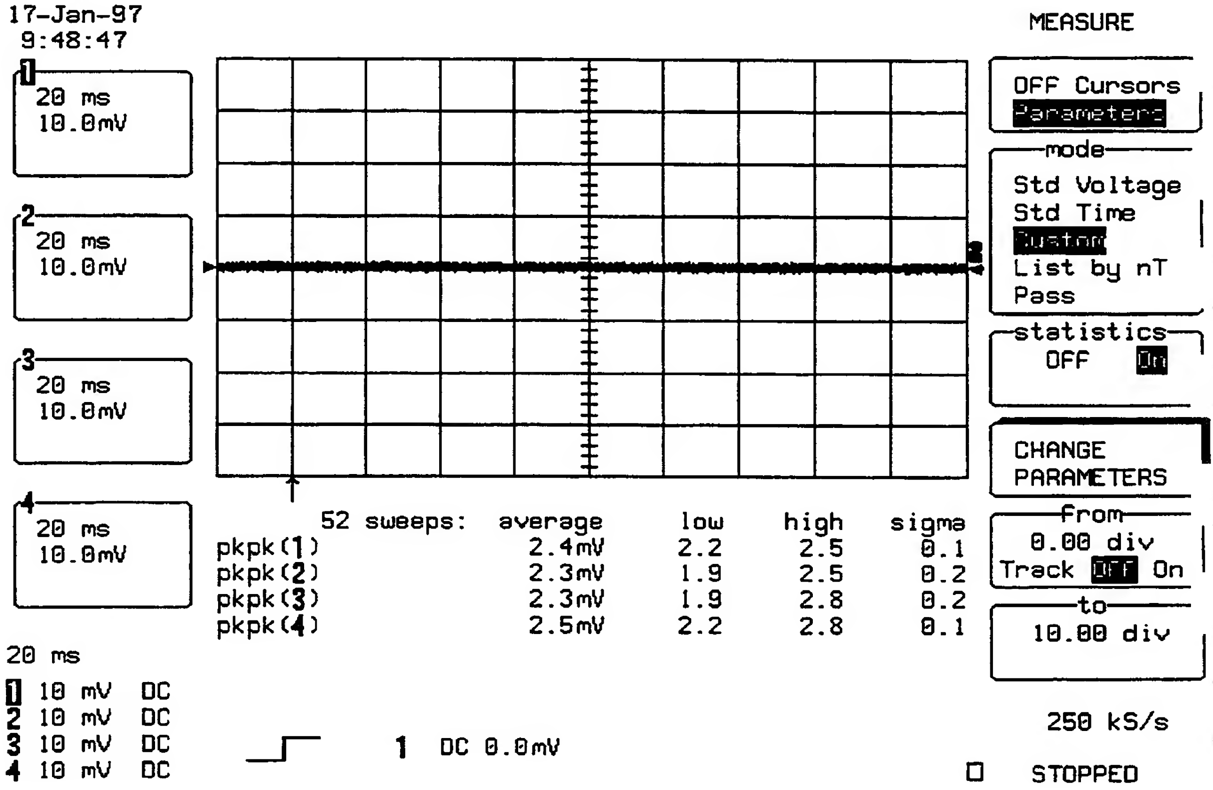
Timebase : **20 msec/div.**
Channel use : **4**
Record up to : **50 k Samples**
Press : **Cursors/Measure**
Measure : **Parameters**
Mode : **Custom**
Statistics : **On**
Change parameters
Category : **All**
On line 1 : **Measure pkpk of Ch1**
On line 2 : **Measure pkpk of Ch2**
On line 3 : **Measure pkpk of Ch3**
On line 4 : **Measure pkpk of Ch4**
On line 5 : **no parameter selected for line 5**



```
17-Jan-97
 9:44:22
1  20 ms   10.0mV
2  20 ms   10.0mV
3  20 ms   10.0mV
4  20 ms   10.0mV

20 ms
1 10 mV  DC
2 10 mV  DC
3 10 mV  DC
4 10 mV  DC
                    1  DC 0.0mV

CHANNEL 1
Coupling
 DC50Ω
 Grounded
 DC1MΩ
 Grounded
 AC1MΩ
V/div OFFset
 NORMAL
 ECL  TTL
Global BWL
 OFF  25MHz
 200MHz
Probe Atten
 x1
 x2
 x5
 x10
 x20
250 kS/s
☐ AUTO
```

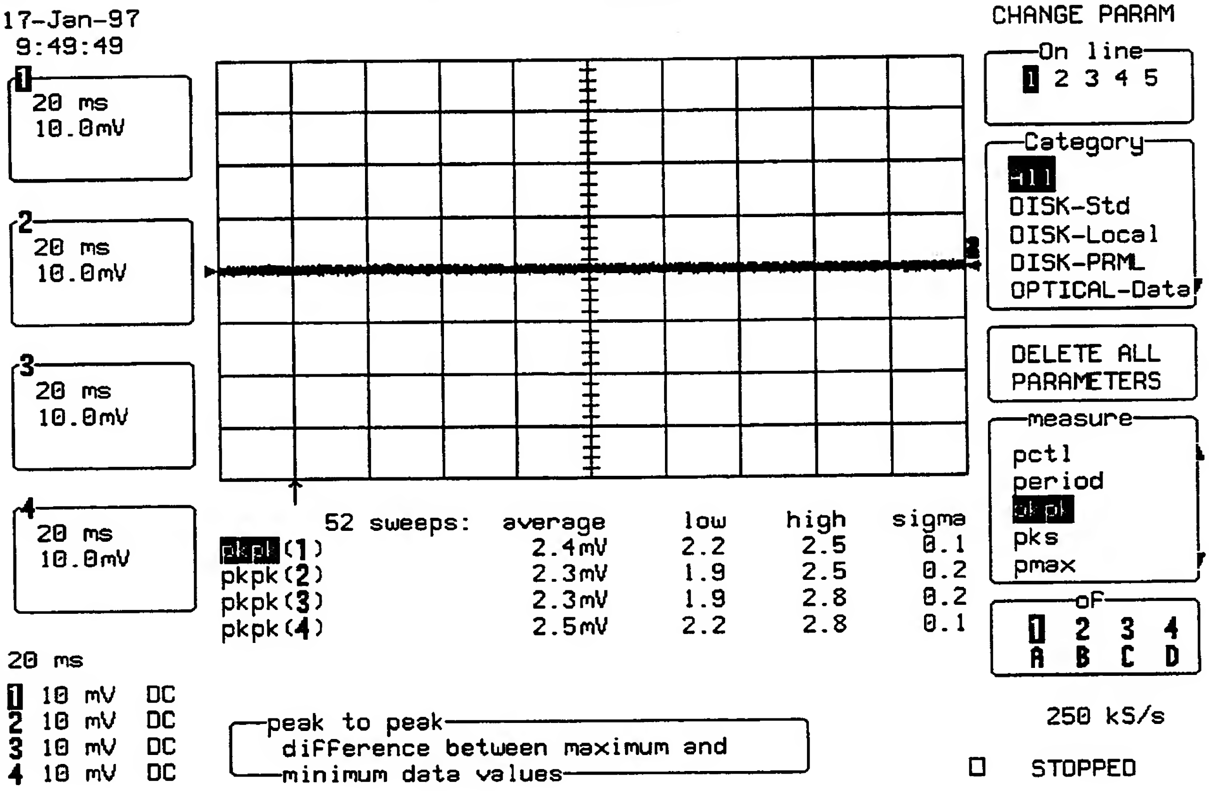


```
17-Jan-97
 9:48:47
1  20 ms   10.0mV
2  20 ms   10.0mV
3  20 ms   10.0mV
4  20 ms   10.0mV

          52 sweeps:  average    low    high   sigma
pkpk(1)                2.4mV     2.2    2.5    0.1
pkpk(2)                2.3mV     1.9    2.5    0.2
pkpk(3)                2.3mV     1.9    2.8    0.2
pkpk(4)                2.5mV     2.2    2.8    0.1

20 ms
1 10 mV  DC
2 10 mV  DC
3 10 mV  DC
4 10 mV  DC
                    1  DC 0.0mV

MEASURE
 OFF Cursors
 Parameters
mode
 Std Voltage
 Std Time
 Custom
 List by nT
 Pass
statistics
 OFF  On
CHANGE
PARAMETERS
from
 0.00 div
Track OFF On
to
 10.00 div
250 kS/s
☐ STOPPED
```



```
17-Jan-97
 9:49:49

1  20 ms   10.0mV
2  20 ms   10.0mV
3  20 ms   10.0mV
4  20 ms   10.0mV

             52 sweeps:   average   low   high   sigma
pkpk(1)                    2.4mV    2.2   2.5    0.1
pkpk(2)                    2.3mV    1.9   2.5    0.2
pkpk(3)                    2.3mV    1.9   2.8    0.2
pkpk(4)                    2.5mV    2.2   2.8    0.1

20 ms
1  10 mV   DC
2  10 mV   DC
3  10 mV   DC
4  10 mV   DC

peak to peak
  difference between maximum and
  minimum data values
```

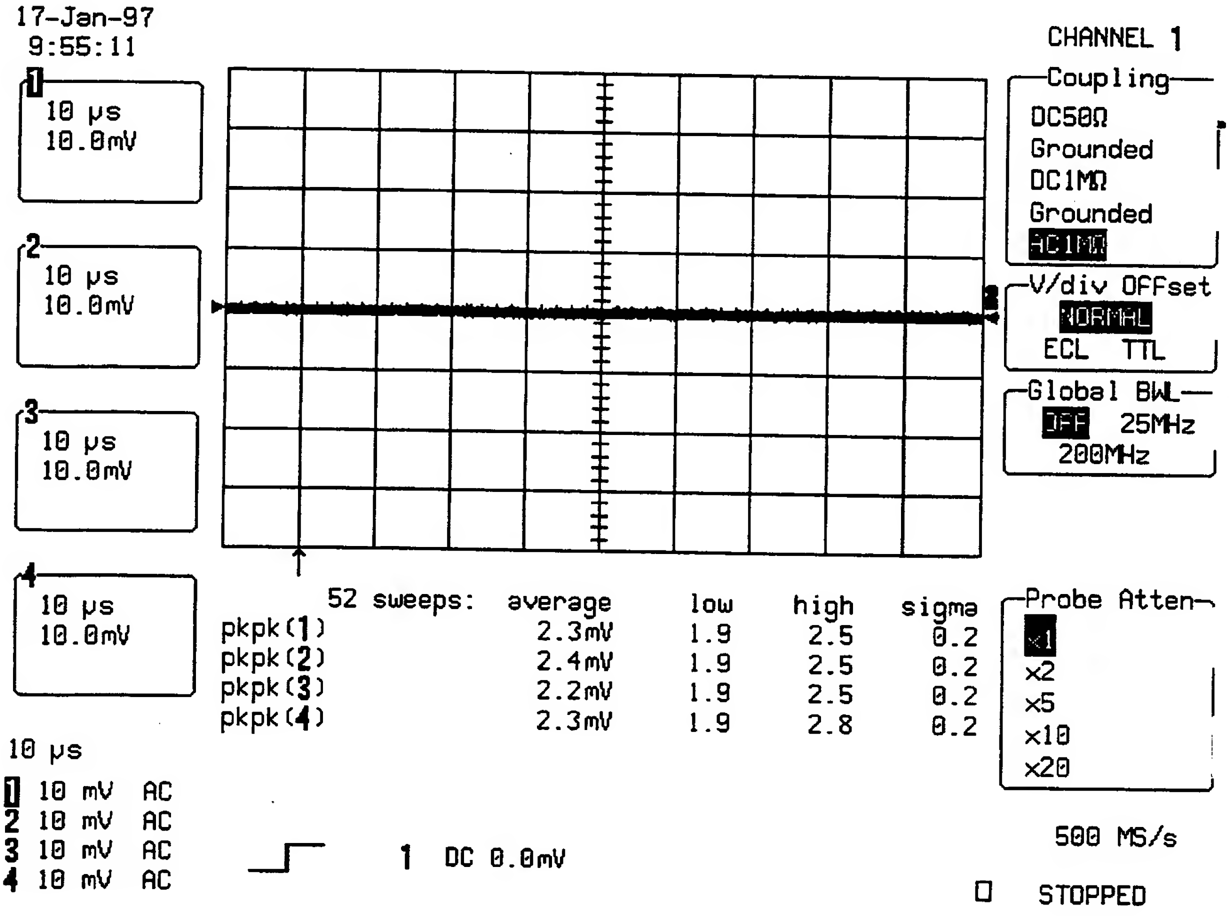
- Press **Clear Sweeps.**
- Measure for at least **50 sweeps**, then press **Stop** to halt the acquisition.
- Record the four **high pkpk** parameter values in Table 4, and compare the test results to the limits in the test record.
- Repeat the test for Timebase : **1 msec/div.**, **50 µsec/div.**, and **10 µsec/div.**
- Record the measurements (high pkpk of 1,2,3,4) in Table 4, and compare the results to the limits in the test record.

b. AC 1MΩ

- Recall **574p017.PNL** or configure the DSO as shown in 5.6.1.a, and for each Channel make the following changes :

Input Coupling : **AC 1MΩ**

- Press **Clear Sweeps.**
- Measure for at least **50 sweeps**, then press **Stop** to halt the acquisition.
- Record the four **high pkpk** parameter values in Table 4, and compare the test results to the limits in the test record.



```
17-Jan-97
 9:55:11

1  10 µs
   10.0mV
2  10 µs
   10.0mV
3  10 µs
   10.0mV
4  10 µs
   10.0mV

           52 sweeps:   average    low    high   sigma
pkpk(1)                  2.3mV     1.9    2.5     0.2
pkpk(2)                  2.4mV     1.9    2.5     0.2
pkpk(3)                  2.2mV     1.9    2.5     0.2
pkpk(4)                  2.3mV     1.9    2.8     0.2

10 µs
1 10 mV  AC
2 10 mV  AC
3 10 mV  AC
4 10 mV  AC
                    1  DC 0.0mV

500 MS/s
STOPPED
```

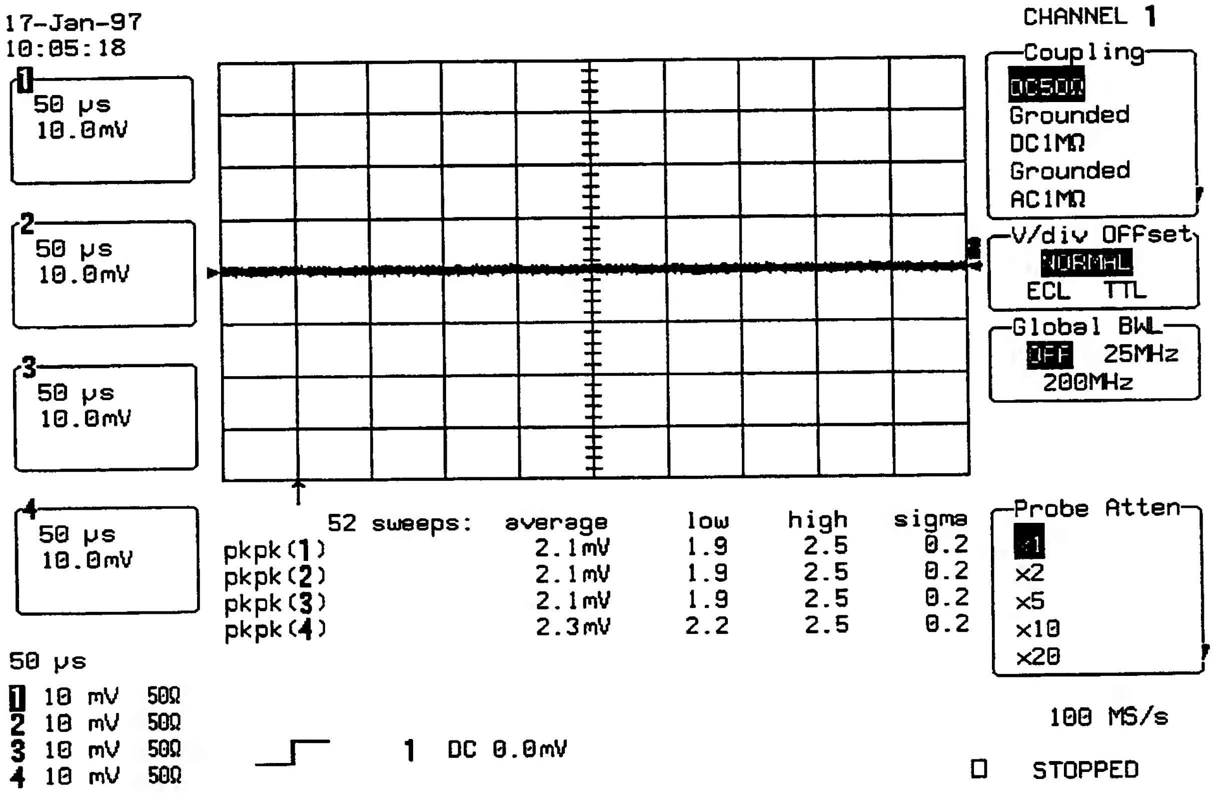
c. DC 50Ω

- Recall **574p018.PNL** or configure the DSO as shown in 5.6.1.a, and for each Channel make the following changes :

  Input Coupling : **DC 50Ω**

- Press **Clear Sweeps.**
- Measure for at least **50 sweeps**, then press **Stop** to halt the acquisition.
- Record the four **high pkpk** parameter values in Table 4, and compare the test results to the limits in the test record.

- Repeat the test for Timebase : **50 µsec/div.**
- Record the measurements (high pkpk of 1,2,3,4) in Table 4, and compare the results to the limits in the test record.



```
17-Jan-97                                                              CHANNEL 1
10:05:18                                                               Coupling
                                                                       DC50Ω
1  50 µs                                                               Grounded
   10.0mV                                                              DC1MΩ
                                                                       Grounded
2  50 µs                                                               AC1MΩ
   10.0mV                                                              V/div Offset
                                                                       NORMAL
3  50 µs                                                               ECL   TTL
   10.0mV                                                              Global BWL
                                                                       OFF   25MHz
4  50 µs                                                               200MHz
   10.0mV
              52 sweeps:   average     low     high    sigma           Probe Atten
           pkpk(1)          2.1mV      1.9     2.5      0.2            ×1
           pkpk(2)          2.1mV      1.9     2.5      0.2            ×2
           pkpk(3)          2.1mV      1.9     2.5      0.2            ×5
           pkpk(4)          2.3mV      2.2     2.5      0.2            ×10
                                                                       ×20
50 µs
1  10 mV  50Ω                                                          100 MS/s
2  10 mV  50Ω
3  10 mV  50Ω                    1  DC 0.0mV                         ☐  STOPPED
4  10 mV  50Ω
```

d. DC 50Ω, 2 Channel Mode

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- Recall **574p019.PNL** or configure the DSO as shown in 5.6.1.a. and make the following changes :

Input Coupling : **DC 50Ω** on all 4 Channels

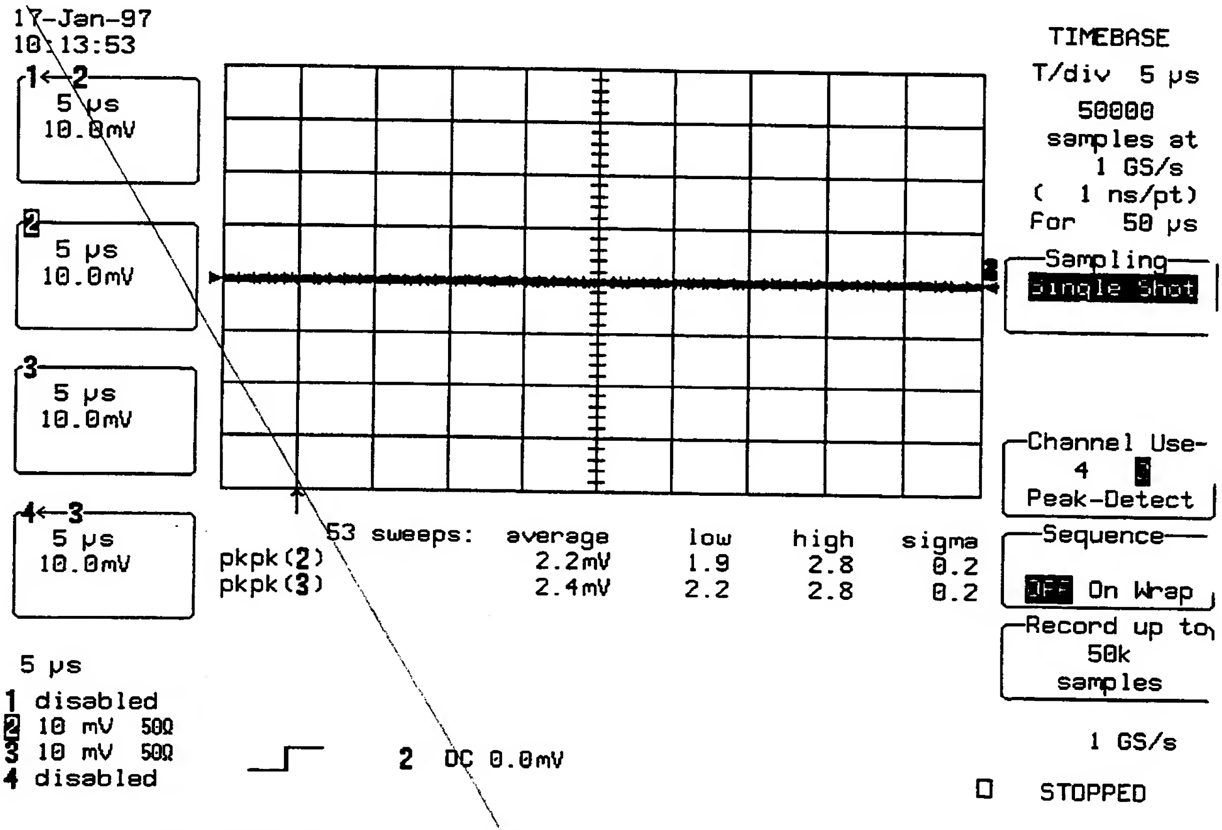
Input gain : **10 mV/div.** on all 4 Channels

Timebase : **5 µsec/div.**

Select Setup Timebase

Channel use : **2**
Change parameters

On line 1 : **Measure pkpk of Ch2**
On line 2 : **Measure pkpk of Ch3**



```
17-Jan-97                                                                TIMEBASE
10:13:53                                                              T/div  5 µs
1←2                                                                      50000
 5 µs                                                                 samples at
10.0mV                                                                    1 GS/s
                                                                      (  1 ns/pt)
2                                                                     For   50 µs
 5 µs                                                                 Sampling
10.0mV                                                                Single Shot

3
 5 µs
10.0mV                                                                Channel Use
                                                                       4   2
                                                                      Peak-Detect
4←3
 5 µs       53 sweeps:  average    low    high   sigma              Sequence
10.0mV      pkpk(2)      2.2mV     1.9    2.8     0.2               Off   On Wrap
            pkpk(3)      2.4mV     2.2    2.8     0.2               Record up to
                                                                       50k
                                                                      samples
5 µs
1 disabled                                                              1 GS/s
2 10 mV  50Ω
3 10 mV  50Ω              2  DC 0.0mV
4 disabled                                                          ☐  STOPPED
```

- Press **Clear Sweeps.**
- Measure for at least **50 sweeps**, then press **Stop** to halt the acquisition.
- Record the two **high pkpk** parameter values in Table 4, and compare the test results to the limits in the test record.

e. DC 50Ω, All Channels Combined

- Recall **574p020.PNL** or configure the DSO as shown in 5.6.1.a. and make the following changes :

Input Coupling	:	**DC 50Ω on all 4 Channels**
Timebase	:	**2 µsec/div.**
Change parameters On line 1	:	**Measure pkpk of Ch2**

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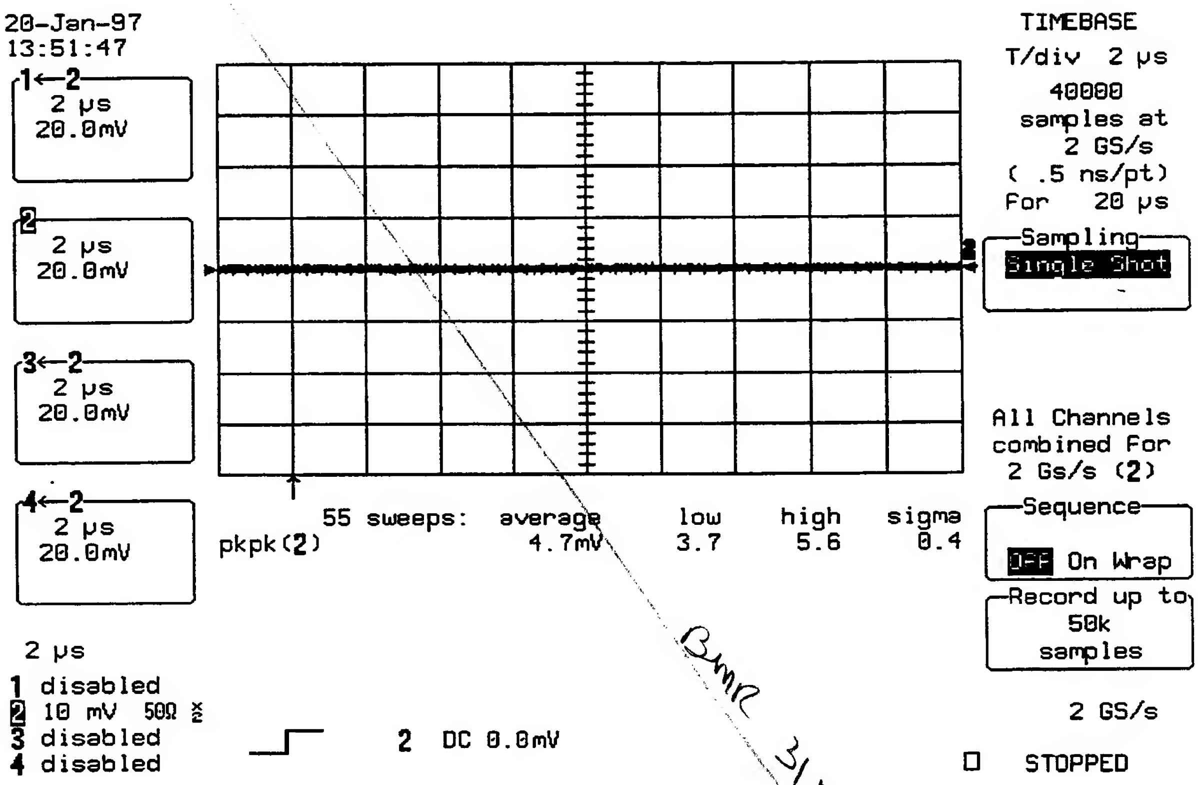
- Connect a **PP094** adapter to Channel 2 and Channel 3

- Check :
- PP094 is identified on **Channel 2.**
- Channel 1, Channel 3 and Channel 4 are **disabled**
- Sampling rate is **4 GS/s**



20-Jan-97
13:51:47

1←2
2 µs
20.0mV

2
2 µs
20.0mV

3←2
2 µs
20.0mV

4←2
2 µs
20.0mV

55 sweeps: average low high sigma
pkpk(2) 4.7mV 3.7 5.6 0.4

2 µs
1 disabled
2 10 mV 50Ω
3 disabled
4 disabled

2 DC 0.0mV

TIMEBASE
T/div 2 µs
40000
samples at
2 GS/s
(.5 ns/pt)
For 20 µs

Sampling
Single Shot

All Channels
combined For
2 Gs/s (2)

Sequence
Off On Wrap

Record up to
50k
samples

2 GS/s
☐ STOPPED

Bmr 31 MAR04

- Press **Clear Sweeps.**
- Measure for at least **50 sweeps**, then press **Stop** to halt the acquisition.
- Record the **high pkpk** parameter value in Table 4, and compare the test result to the limits in the test record.
- Disconnect the **PP094** adapter.

5.6.2 Rms Noise

Specifications

0.9 % of full scale or 0.72 mV at 10 mV/div.

a. DC 1MΩ

Procedure

With no signal connected to the inputs

- Recall **574p021.PNL** or configure the DSO :

Panel Setups : **Recall FROM DEFAULT SETUP**
Channels Trace ON **Channel 1, Channel 2, Channel 3 & Channel 4**
Input Coupling : **DC 1MΩ on all 4 Channels**
Input gain : **10 mV/div. on all 4 Channels**

Trigger setup : **Edge**
Trigger on : **1**
Coupling 1 : **DC**
Trigger Mode : **Auto**

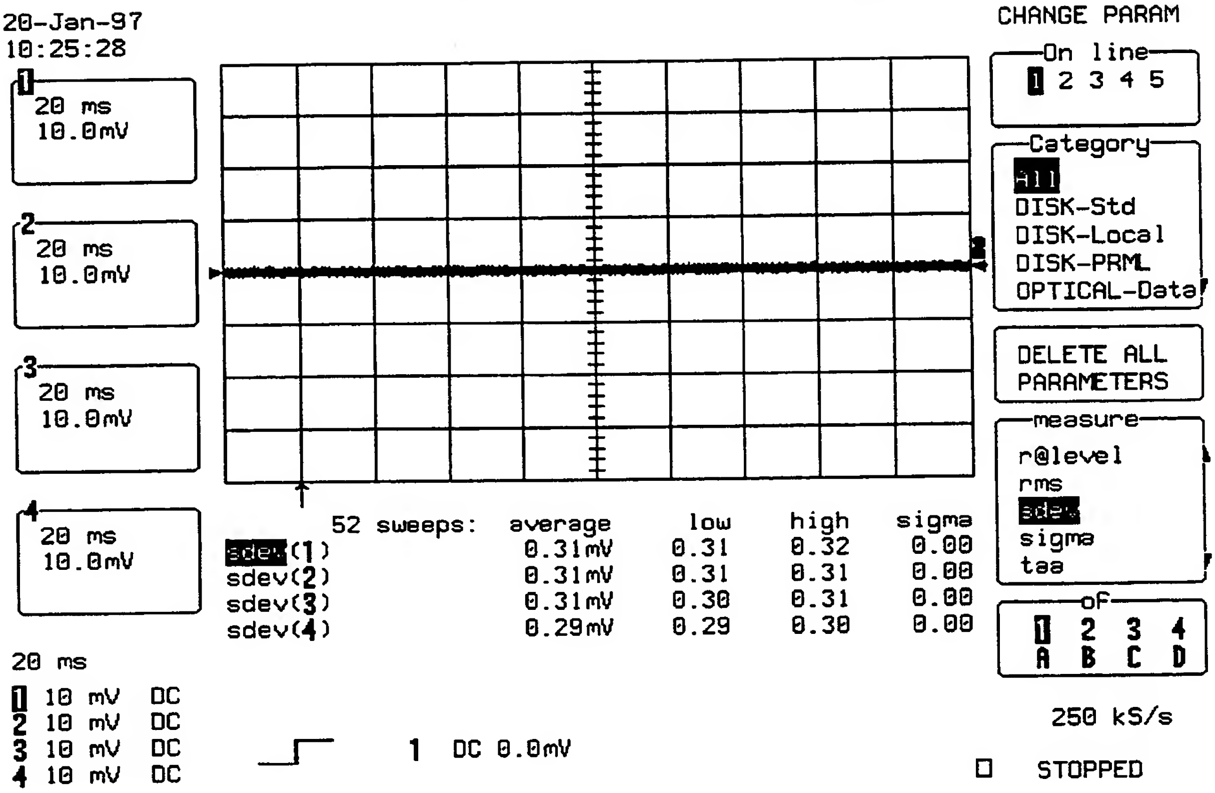
Timebase : **20 msec/div.**
Channel use : **4**
Record up to : **50 k Samples**
Press : **Cursors/Measure**
Measure : **Parameters**
Mode : **Custom**
Statistics : **On**

Change parameters

Category : **All**

On line 1 : **Measure sdev of Ch1**
On line 2 : **Measure sdev of Ch2**
On line 3 : **Measure sdev of Ch3**
On line 4 : **Measure sdev of Ch4**

On line 5 : **no parameter selected for line 5**



```
         52 sweeps:  average   low    high   sigma
sdev(1)              0.31mV    0.31   0.32   0.00
sdev(2)              0.31mV    0.31   0.31   0.00
sdev(3)              0.31mV    0.30   0.31   0.00
sdev(4)              0.29mV    0.29   0.30   0.00

20 ms
1 10 mV  DC
2 10 mV  DC
3 10 mV  DC
4 10 mV  DC                1  DC 0.0mV
```

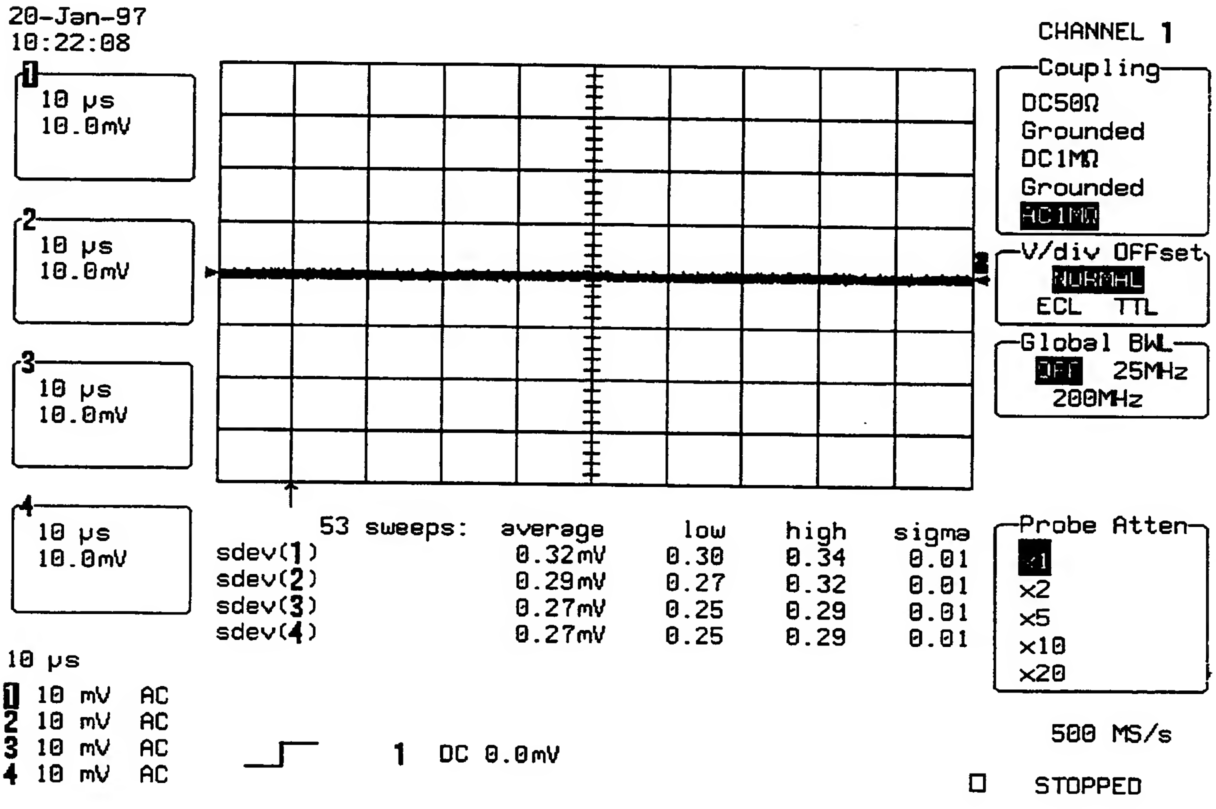
- Press **Clear Sweeps.**
- Measure for at least **50 sweeps**, then press **Stop** to halt the acquisition.
- Record the four **high sdev** parameter values in Table 5, and compare the test results to the limits in the test record.
- Repeat the test for Timebase : **1 msec/div.**, **50 µsec/div.**, and **10 µsec/div.**
- Record the measurements (high sdev of 1,2,3,4) in Table 5, and compare the results to the limits in the test record.

b. AC 1MΩ

- Recall **574p022.PNL** or configure the DSO as shown in 5.6.2.a. and for each Channel make the following change :

  Input Coupling : **AC 1MΩ**

- Press **Clear Sweeps.**
- Measure for at least **50 sweeps**, then press **Stop** to halt the acquisition.
- Record the four **high sdev** parameter values in Table 5, and compare the test results to the limits in the test record.



```
20-Jan-97
10:22:08                                                              CHANNEL 1

1  10 µs        Coupling: DC50Ω / Grounded / DC1MΩ / Grounded / AC1MΩ
   10.0mV
2  10 µs        V/div OFFset: NORMAL / ECL  TTL
   10.0mV
3  10 µs        Global BWL: OFF  25MHz  200MHz
   10.0mV
4  10 µs
   10.0mV

           53 sweeps:  average    low     high    sigma     Probe Atten
sdev(1)                0.32mV     0.30    0.34    0.01      x1
sdev(2)                0.29mV     0.27    0.32    0.01      x2
sdev(3)                0.27mV     0.25    0.29    0.01      x5
sdev(4)                0.27mV     0.25    0.29    0.01      x10
                                                            x20
10 µs
1 10 mV  AC                                                 500 MS/s
2 10 mV  AC
3 10 mV  AC              1  DC 0.0mV
4 10 mV  AC                                                 STOPPED
```

c. DC 50Ω

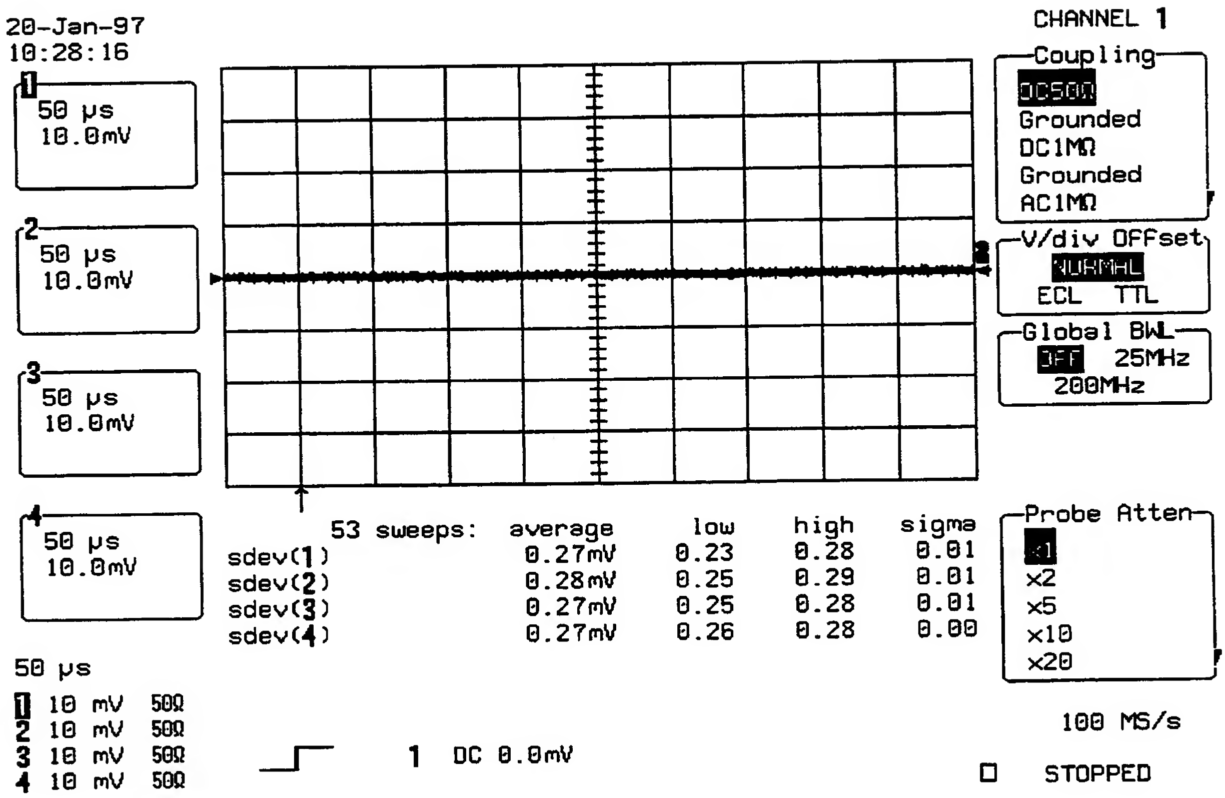
- Recall **574p023.PNL** or configure the DSO as shown in 5.6.2.a and make the following changes :

  Input Coupling : **DC 50Ω on all 4 Channels**

  Timebase : **10 µsec/div.**

- Press **Clear Sweeps.**
- Measure for at least **50 sweeps**, then press **Stop** to halt the acquisition.
- Record the four **high sdev** parameter values in Table 5, and compare the test results to the limits in the test record.

- Repeat the test for Timebase : **50 µsec/div.**
- Record the measurements (high sdev of 1,2,3,4) in Table 5, and compare the results to the limits in the test record.



```
20-Jan-97
10:28:16

1  50 µs  10.0mV
2  50 µs  10.0mV
3  50 µs  10.0mV
4  50 µs  10.0mV

          53 sweeps:  average   low    high   sigma
sdev(1)               0.27mV    0.23   0.28   0.01
sdev(2)               0.28mV    0.25   0.29   0.01
sdev(3)               0.27mV    0.25   0.28   0.01
sdev(4)               0.27mV    0.26   0.28   0.00

50 µs
1  10 mV  50Ω
2  10 mV  50Ω
3  10 mV  50Ω
4  10 mV  50Ω                1  DC 0.0mV

                                                   100 MS/s
                                                   STOPPED
```

d. DC 50Ω, 2 Channel Mode

- Recall **574p024.PNL** or configure the DSO as shown in 5.6.2.a and make the following changes :

Input Coupling : **DC 50Ω on all 4 Channels**

Timebase : **5 µsec/div.**

Select Setup Timebase

Channel use : **2**

Change parameters

On line 1 : **Measure sdev of Ch2**

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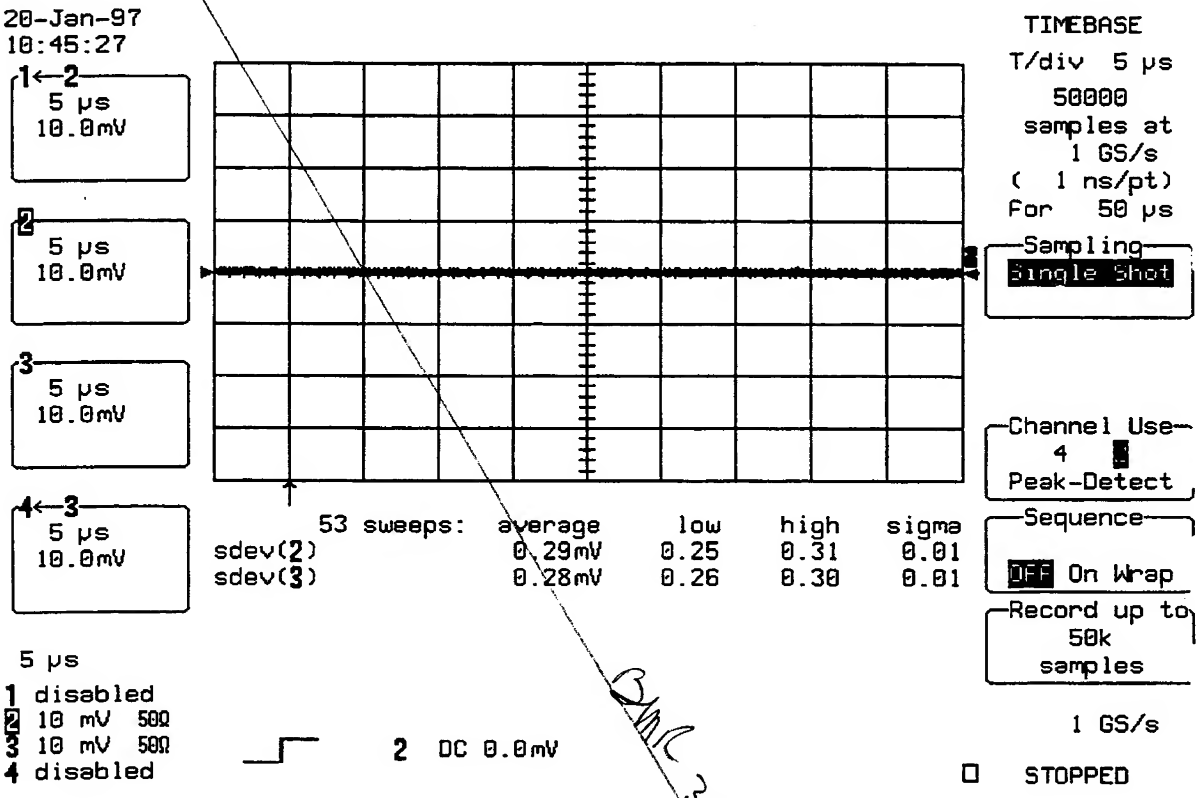
On line 2 : **Measure sdev of Ch3**

- Press **Clear Sweeps.**
- Measure for at least **50 sweeps**, then press **Stop** to halt the acquisition.
- Record the two **high sdev** parameter values in Table 5, and compare the test results to the limits in the test record.



```
20-Jan-97
10:45:27
                                                                TIMEBASE
1←2                                                           T/div   5 µs
 5 µs                                                           50000
 10.0mV                                                      samples at
                                                                  1 GS/s
2                                                             (  1 ns/pt)
 5 µs                                                         For    50 µs
 10.0mV                                                        Sampling
                                                              Single Shot
3
 5 µs
 10.0mV                                                       Channel Use
                                                                  4
4←3                                                           Peak-Detect
 5 µs         53 sweeps:   average     low     high    sigma   Sequence
 10.0mV   sdev(2)          0.29mV      0.25    0.31    0.01
          sdev(3)          0.28mV      0.26    0.30    0.01    OFF On Wrap
                                                               Record up to
                                                                   50k
 5 µs                                                            samples
1 disabled
2 10 mV  50Ω                                                     1 GS/s
3 10 mV  50Ω
4 disabled            2  DC 0.0mV                           ☐   STOPPED
```

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e. DC 50Ω, All Channels Combined

- Recall **574p025.PNL** or configure the DSO as shown in 5.6.2.a and make the following changes :

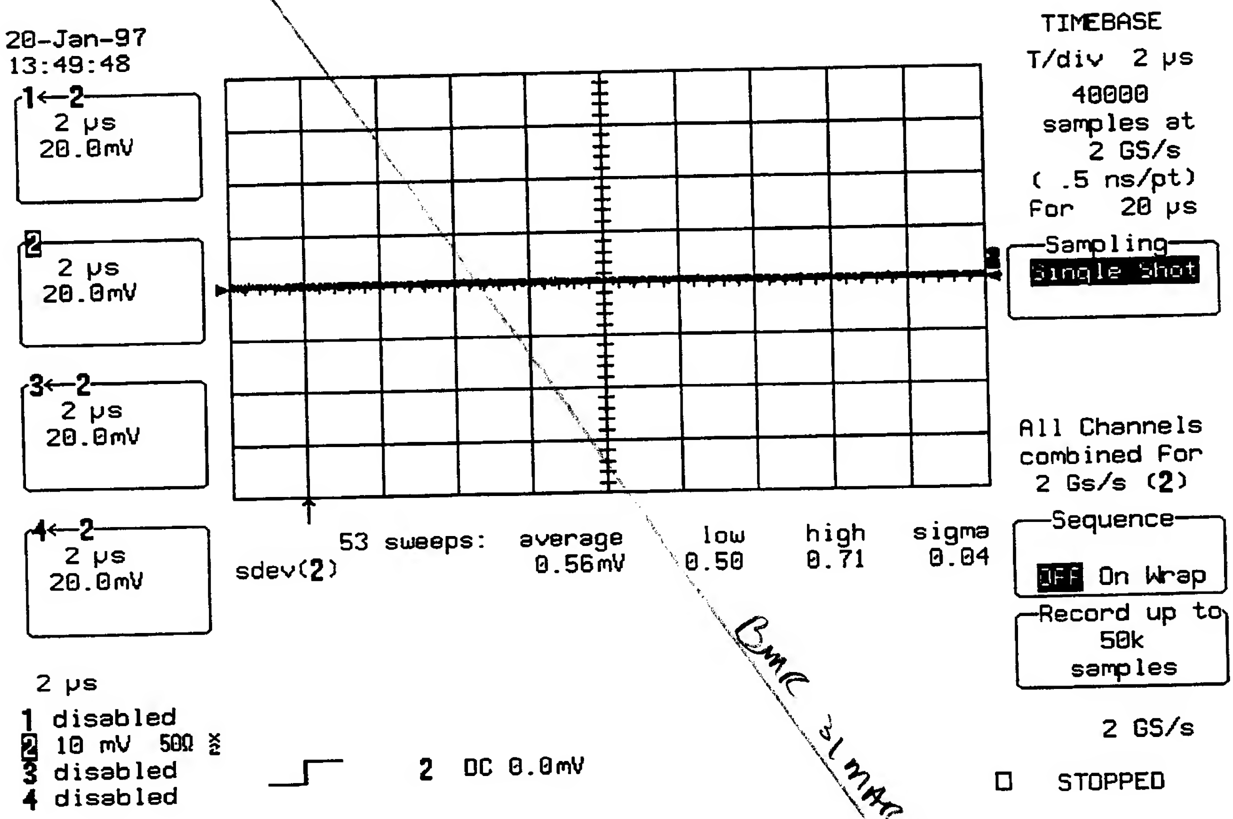
Input Coupling : **DC 50Ω** on all 4 Channels

Timebase : **2 µsec/div.**

Change parameters

On line 1 : **Measure sdev of Ch2**

- Connect a **PP094** adapter to Channel 2 and Channel 3
- Check :
- PP094 is identified on **Channel 2**
- Channel 1, Channel 3 and Channel 4 are **disabled**
- Sampling rate is **4 GS/s**



```
20-Jan-97                                                        TIMEBASE
13:49:48                                                         T/div  2 µs
1←2                                                               40000
 2 µs                                                            samples at
 20.0mV                                                             2 GS/s
                                                                 ( .5 ns/pt)
2                                                                For   20 µs
 2 µs                                                            Sampling
 20.0mV                                                          Single Shot

3←2
 2 µs                                                            All Channels
 20.0mV                                                          combined For
                                                                  2 Gs/s (2)
4←2              53 sweeps:  average    low    high   sigma     Sequence
 2 µs          sdev(2)        0.56mV   0.50    0.71    0.04     OFF On Wrap
 20.0mV                                                          Record up to
                                                                    50k
                                                                  samples
 2 µs
1 disabled                                                         2 GS/s
2 10 mV  50Ω
3 disabled          2  DC 0.0mV                                 ☐   STOPPED
4 disabled
```

BMC 31 MAR 04

- Press **Clear Sweeps.**
- Measure for at least **50 sweeps**, then press **Stop** to halt the acquisition.
- Record the **high sdev** parameter value in Table 5, and compare the test result to the limits in the test record.
- Disconnect the **PP094** adapter.

5.6.3 Ground Line Test

Specifications

±5 % of full scale at 5 mV/div.
±2 % of full scale at 10 mV/div. and above.

Procedure

The stability of the ground line is verified for each channel at each fixed gain. The measured average values are checked against the desired limits.

a. DC 1MΩ

With no signal connected to the inputs

- Recall **574p026.PNL** or configure the DSO :

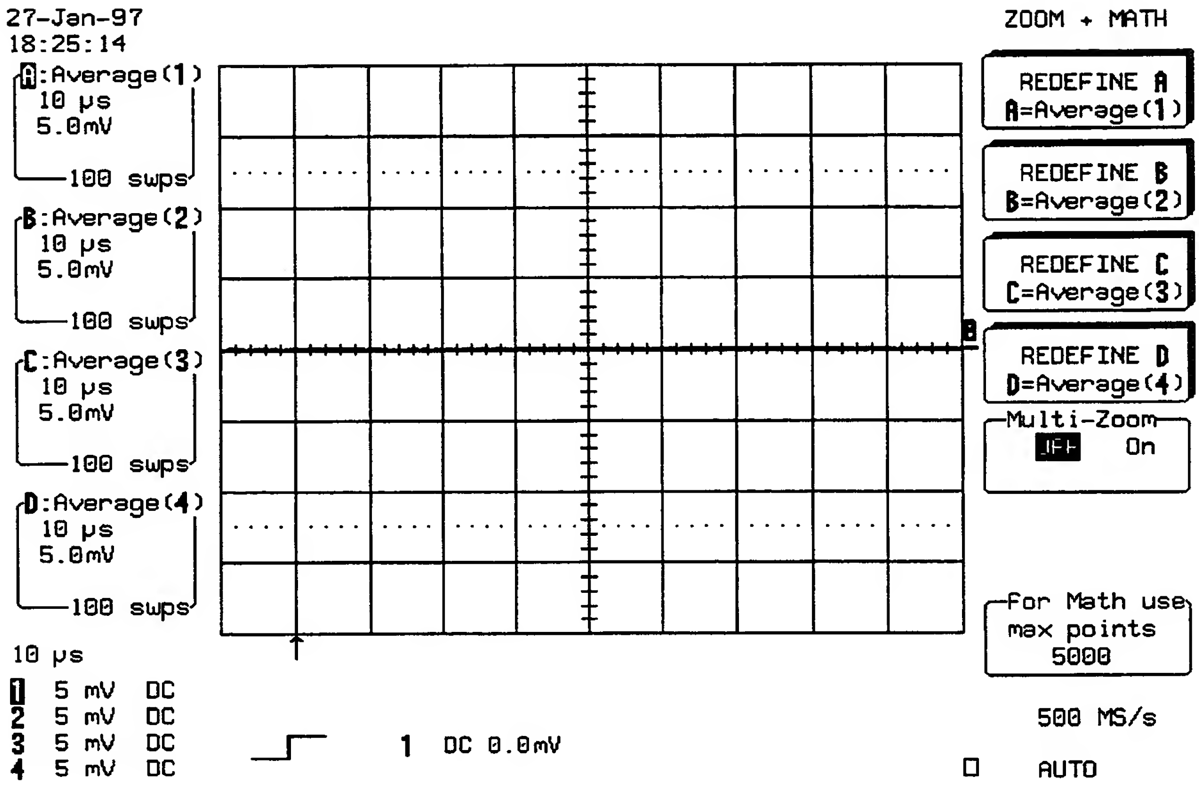
Channels Trace ON **Channel 1, Channel 2, Channel 3 & Channel 4**
Input Coupling : **DC 1MΩ on all 4 Channels**
Input gain : **5 mV/div. on all 4 Channels**
Offset : **Zero on all 4 Channels**

Trigger on : **Channel 1, DC**
Trigger mode : **Auto**
Timebase : **10 µsec/div.**

Channel use : **4**
Record up : **50 k**
Channels Trace OFF **Channel 1, Channel 2, Channel 3 & Channel 4**

Zoom+Math Trace ON **A, B, C & D**
Select Math Setup
For Math : **Use at most 5000 points**
Redefine A, B, C, D **Channel 1, Channel 2, Channel 3 & Channel 4**
Use Math ? : **Yes**
Math Type : **Average**
Avg. Type : **Summed**
For : **100 sweeps**

Press Cursors/Measure
Select : **Parameters**
Mode : **Custom**
Statistics : **off**



27-Jan-97
18:25:14

A:Average(1)
10 µs
5.0mV
100 swps

B:Average(2)
10 µs
5.0mV
100 swps

C:Average(3)
10 µs
5.0mV
100 swps

D:Average(4)
10 µs
5.0mV
100 swps

10 µs

1	5 mV	DC
2	5 mV	DC
3	5 mV	DC
4	5 mV	DC

1 DC 0.0mV

ZOOM + MATH

REDEFINE A
A=Average(1)

REDEFINE B
B=Average(2)

REDEFINE C
C=Average(3)

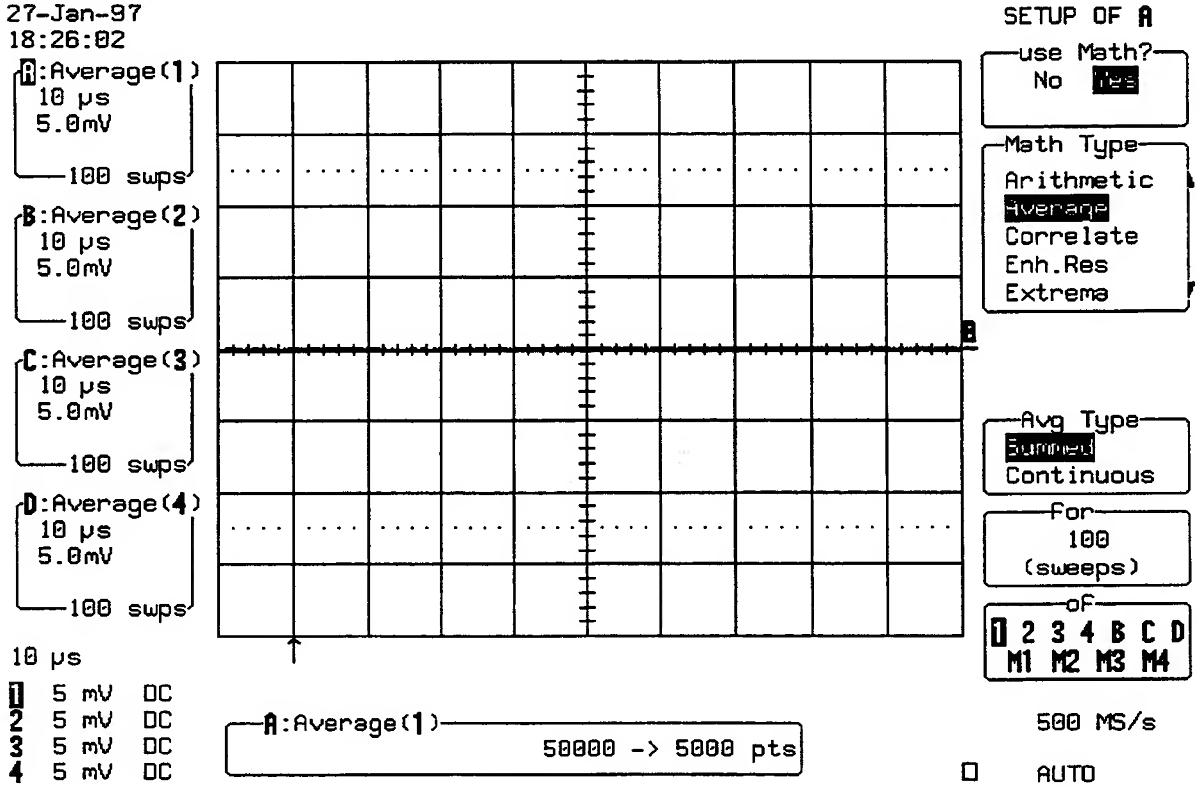
REDEFINE D
D=Average(4)

Multi-Zoom
Off On

For Math use
max points
5000

500 MS/s

☐ AUTO



27-Jan-97
18:26:02

A:Average(1)
10 µs
5.0mV
100 swps

B:Average(2)
10 µs
5.0mV
100 swps

C:Average(3)
10 µs
5.0mV
100 swps

D:Average(4)
10 µs
5.0mV
100 swps

10 µs

1	5 mV	DC
2	5 mV	DC
3	5 mV	DC
4	5 mV	DC

A:Average(1)
50000 -> 5000 pts

SETUP OF A

use Math?
No Yes

Math Type
Arithmetic
Average
Correlate
Enh.Res
Extrema

Avg Type
Summed
Continuous

For
100
(sweeps)

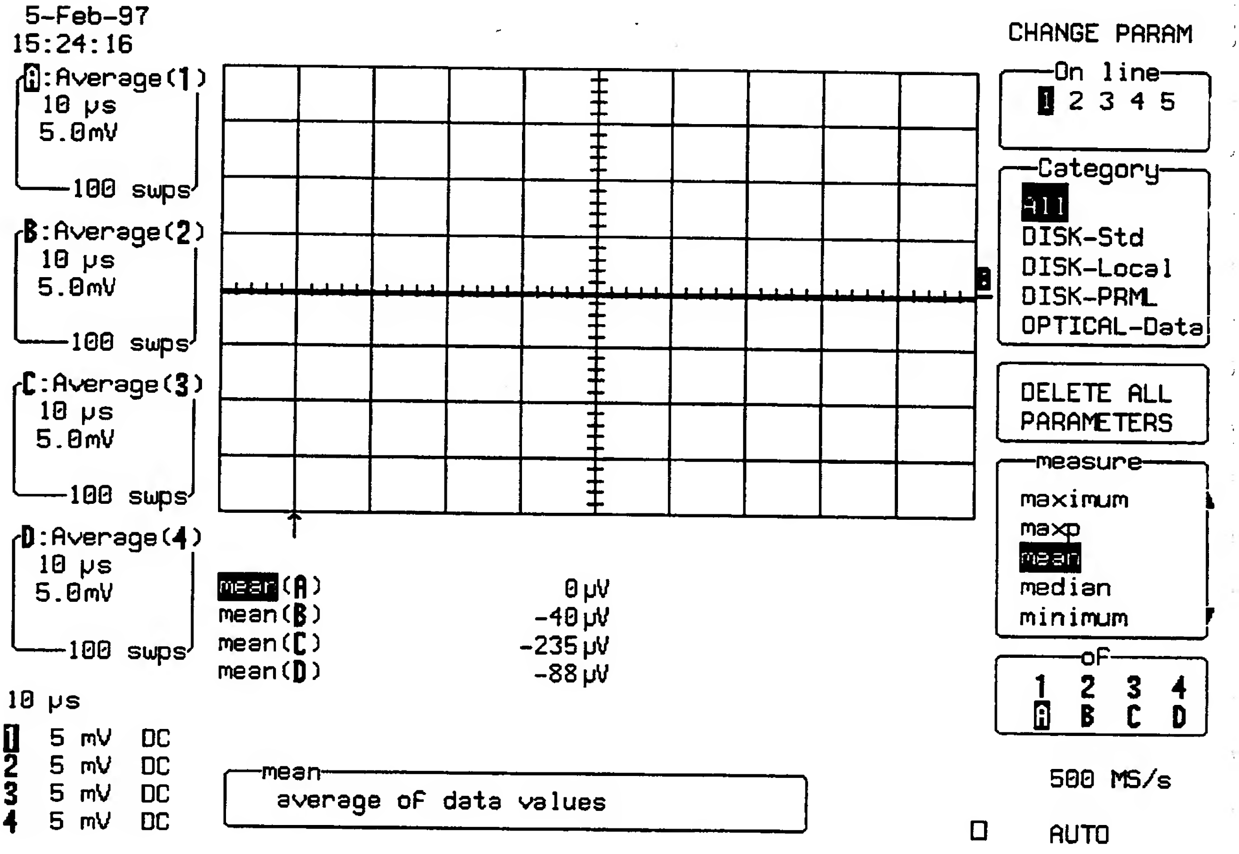
of
1 2 3 4 B C D
M1 M2 M3 M4

500 MS/s

☐ AUTO

Change parameters

On line 1 : **Measure mean of A**
On line 2 : **Measure mean of B**
On line 3 : **Measure mean of C**
On line 4 : **Measure mean of D**



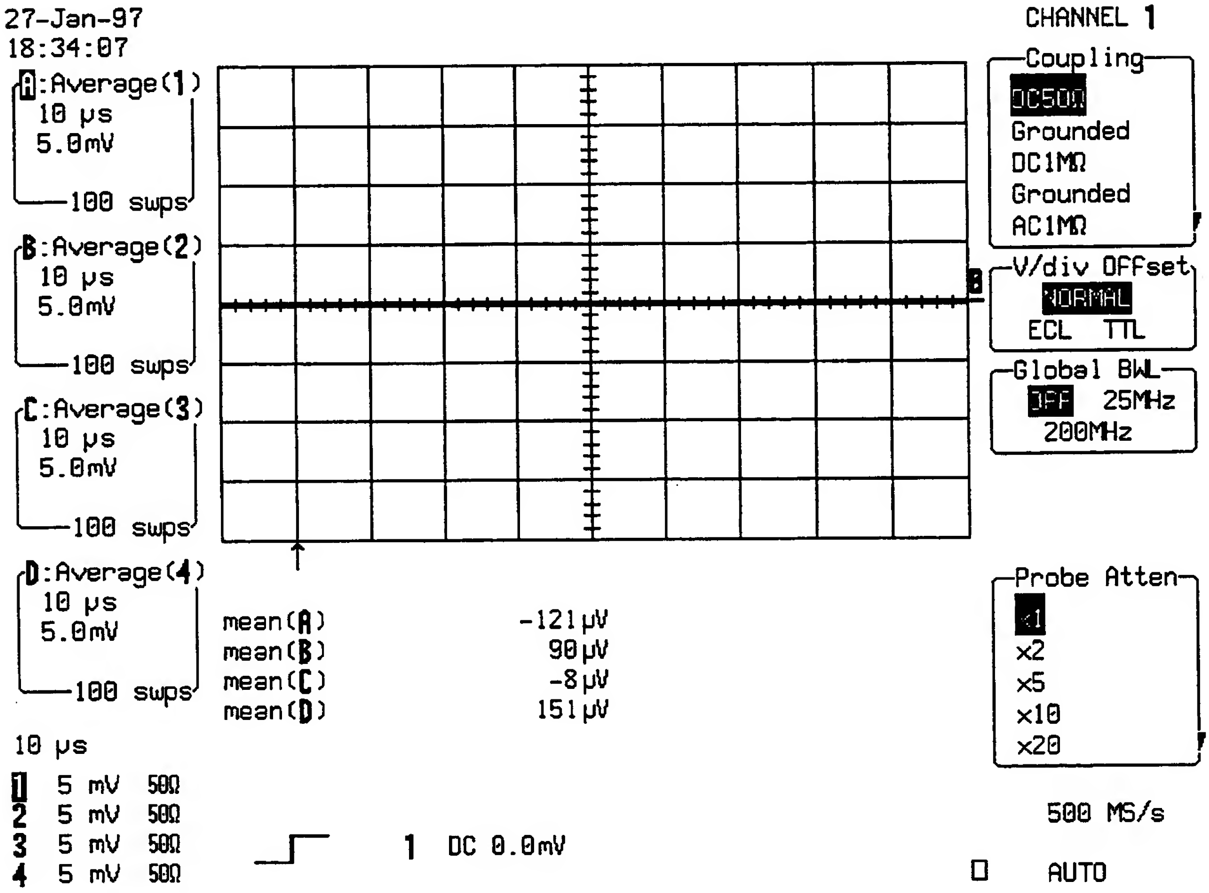
```
5-Feb-97
15:24:16
A:Average(1)
 10 µs
 5.0mV
    100 swps
B:Average(2)
 10 µs
 5.0mV
    100 swps
C:Average(3)
 10 µs
 5.0mV
    100 swps
D:Average(4)
 10 µs
 5.0mV
    100 swps
10 µs
1  5 mV  DC
2  5 mV  DC
3  5 mV  DC
4  5 mV  DC

mean(A)        0 µV
mean(B)      -40 µV
mean(C)     -235 µV
mean(D)      -88 µV

mean
 average of data values

500 MS/s
AUTO
```

- Press **Clear Sweeps.**
- After **100 sweeps** record the **mean** value of **A, B, C & D** in Table 6, and compare the test results to the limits in the test record.
- Repeat step 5.6.3.a. for all vertical scale settings listed in Table 6, and check that the test results (mean value of A, B, C, D) are within the limits specified.
- Record the measurements in Table 6.

b. DC 50Ω

- Recall **574p027.PNL** or configure the DSO as shown in 5.6.3.a. and for each Channel make the following change :

Input Coupling : **DC 50Ω**



27-Jan-97
18:34:07

A:Average(1)
10 µs
5.0mV
100 swps

B:Average(2)
10 µs
5.0mV
100 swps

C:Average(3)
10 µs
5.0mV
100 swps

D:Average(4)
10 µs
5.0mV
100 swps

mean(A)	-121 µV
mean(B)	90 µV
mean(C)	-8 µV
mean(D)	151 µV

10 µs

1	5 mV	50Ω
2	5 mV	50Ω
3	5 mV	50Ω
4	5 mV	50Ω

1 DC 0.0mV

CHANNEL 1

Coupling: DC50Ω

V/div Offset: NORMAL

Global BWL: OFF

Probe Atten: x1

500 MS/s

AUTO

- Press **Clear Sweeps.**

- After **100 sweeps** record the **mean** value of **A, B, C & D** in Table 7, and compare the test results to the limits in the test record.

- Repeat step 5.6.3.b. for all vertical scale settings listed in Table 7, and check that the test results (mean value of A, B, C, D) are within the limits specified.

- Record the measurements in Table 7.

c. DC 50Ω, 2 Channel Mode

- Recall **574p028.PNL** or configure the DSO as shown in 5.6.3.a. and make the following change :

  Input Coupling : **DC 50Ω** on all 4 Channels
  Input gain : **0.2 V/div.** on all 4 Channels
  Timebase : **5 µsec/div.**

  Select **Setup Timebase**

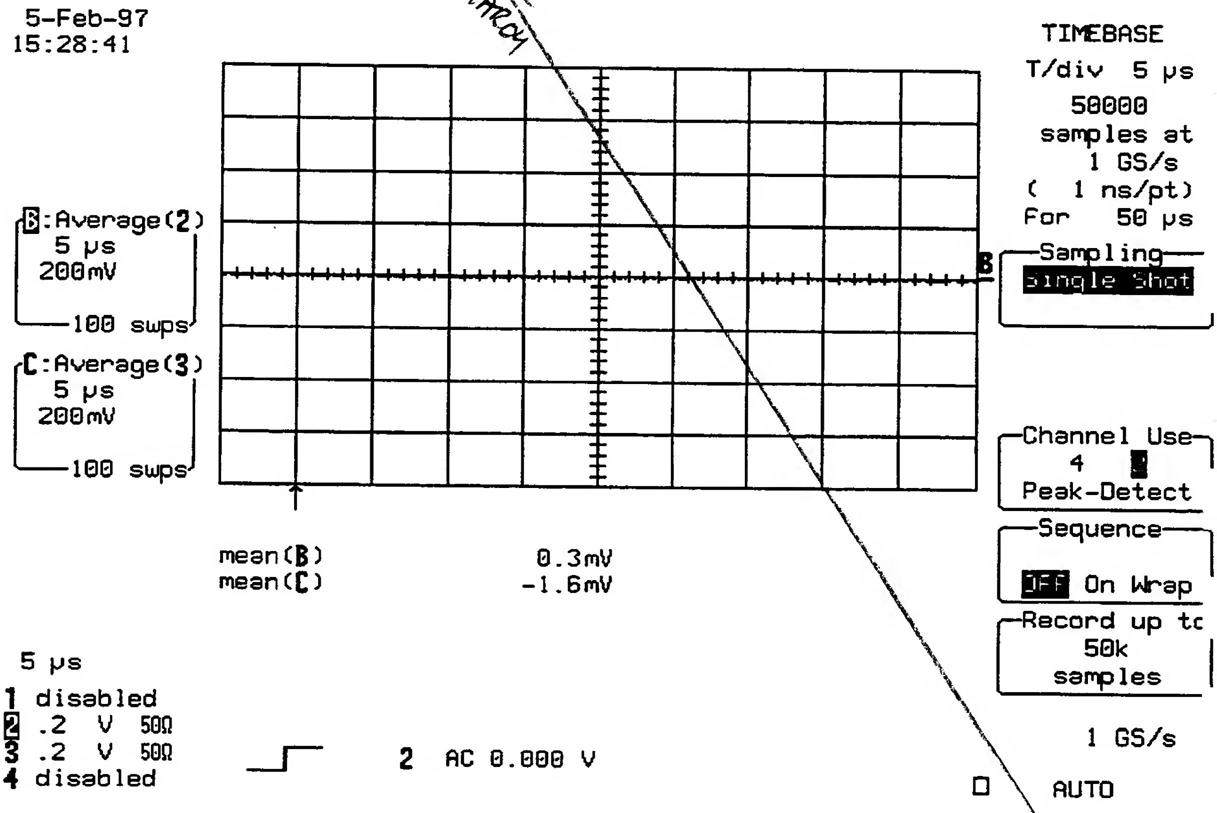
  Channel use : **2**

  Change parameters

  On line 1 : **Mean of B**
  On line 2 : **Mean of C**

- Press **Clear Sweeps.**
- After **100 sweeps** record the **mean** value of **B & C** in Table 7, and compare the test results to the limits in the test record.

BMC
31 MAR 04



```
5-Feb-97
15:28:41

B:Average(2)
  5 µs
 200mV
    100 swps

C:Average(3)
  5 µs
 200mV
    100 swps

mean(B)        0.3mV
mean(C)       -1.6mV

5 µs
1 disabled
2 .2  V  50Ω
3 .2  V  50Ω
4 disabled
                2  AC 0.000 V

TIMEBASE
T/div  5 µs
50000
samples at
1 GS/s
( 1 ns/pt)
For  50 µs
Sampling
Single Shot
Channel Use
4  2
Peak-Detect
Sequence
OFF On Wrap
Record up to
50k
samples
1 GS/s
AUTO
```

d. DC 50Ω, All Channel Combined

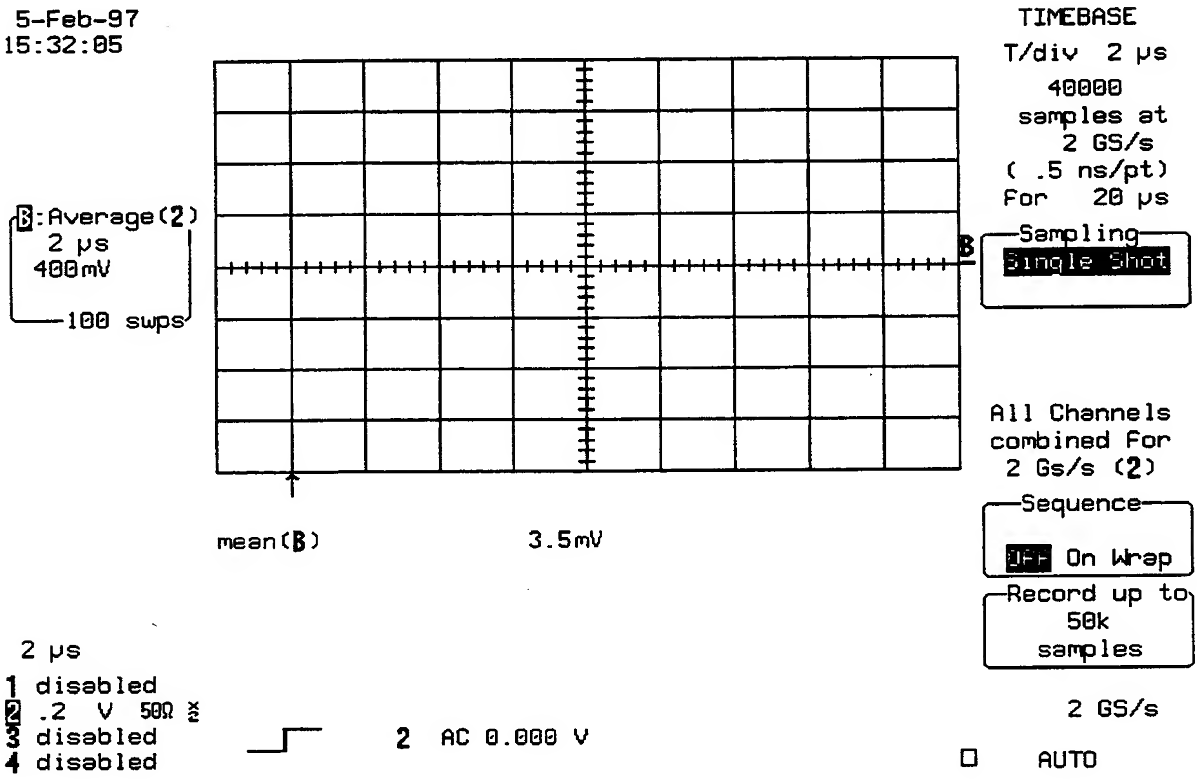
- Recall **574p029.PNL** or configure the DSO as shown in 5.6.3.a. and make the following changes :

Input Coupling	:	**DC 50Ω on all 4 Channels**
Input gain	:	**0.2 V/div. on all 4 Channels**
Timebase	:	**2 µsec/div.**
Change parameters On line 1	:	**Measure Mean of B**

- Connect a PP094 adapter to Channel 2 and Channel 3.
- Check :
- PP094 is identified on **Channel 2**
- Channel 1, Channel 3 and Channel 4 are **disabled**
- Sampling rate is **4 GS/s**

- Press **Clear Sweeps.**

- After **100 sweeps** record the **mean** value of **B** in Table 7, and compare the test result to the limits in the test record.



```
5-Feb-97
15:32:05

B:Average(2)
  2 µs
 400mV
   100 swps

mean(B)            3.5mV

 2 µs
1 disabled
2 .2  V  50Ω
3 disabled
4 disabled

        2  AC 0.000 V

TIMEBASE
T/div  2 µs
 40000
samples at
  2 GS/s
( .5 ns/pt)
For   20 µs
Sampling
Single Shot

All Channels
combined For
2 Gs/s (2)
Sequence
OFF On Wrap
Record up to
 50k
samples

 2 GS/s
□   AUTO
```

- Disconnect the **PP094** adapter.

5.7 DC Accuracy

Specification

≤ ±3 % of full scale at 5mV/div, with 0 mV offset.
≤ ±2 % of full scale at 10mV/div and above, with 0 mV offset.

Description

This test measures the DC Accuracy within the gain range specified.
It requires a DC source with a voltage range of 0 V to 20 V adjustable in steps of no more than 15 mV, and a calibrated DMM that can measure voltage to 0.1 %. Measurements are made using voltage values applied by the external voltage reference source, measured by the DMM, and in the oscilloscope using the parameters Std voltage.
For each known input voltage, the deviation is checked against the tolerance.

5.7.1 Positive DC Accuracy

a. DC 50Ω

Procedure

- Recall **574p030.PNL** or configure the DSO :

Panel Setups : **Recall FROM DEFAULT SETUP**
Channels Trace ON **Channel 1, Channel 2, Channel 3 & Channel 4**
Input Coupling : **DC 50Ω** on all 4 Channels
Input offset : **0.0 mV** on all 4 Channels
Input gain : from **5mV/div to 1 V/div.** (see Table 8) on all 4 Ch
Coupling 1 : **DC**
Slope 1 : **Pos.**
Mode : **Auto**
Holdoff : **Off**
Timebase : **2 msec/div.**
Channel use : **4**
Record up : **50 k**
Channels Trace OFF **Channel 1, Channel 2, Channel 3 & Channel 4**
Zoom+Math Trace ON **A, B, C & D**
Select Math Setup
For Math : **Use at most 5000 points**
Redefine A, B, C, D **Channel 1, Channel 2, Channel 3 & Channel 4**
Use Math ? : **Yes**
Math Type : **Average**
Avg. Type : **Summed**
For : **100 sweeps**

Cursors/Measure : **Parameters**
Mode : **Custom**
Statistics : **off**

Change parameters

On line 1 : **Measure mean of A**
On line 2 : **Measure mean of B**
On line 3 : **Measure mean of C**
On line 4 : **Measure mean of D**

- For the low sensitivities : **5 mV, 10 mV and 20 mV/div.**, connect the test equipment as shown in Figure 5-1.

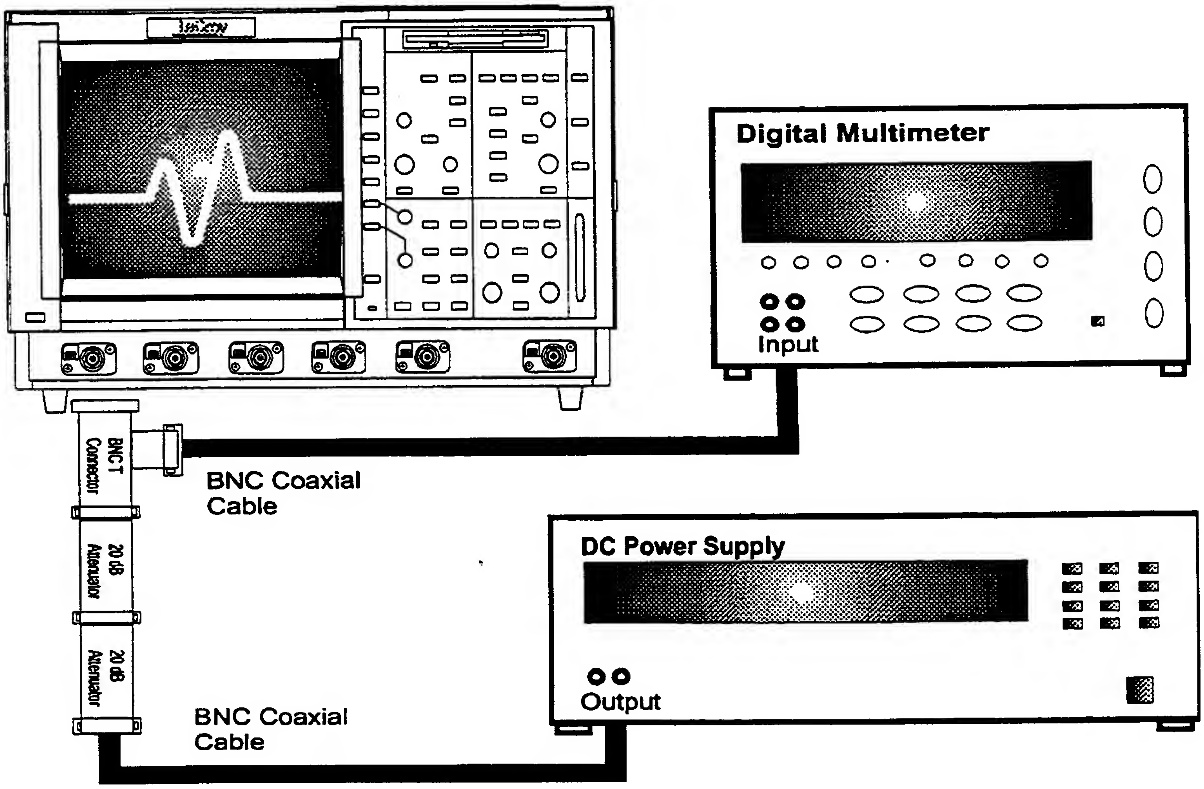


Figure 5-1 : DC 50Ω Accuracy Equipment Setup for 5, 10 and 20 mV/div

- For the sensitivities : 50 mV and 100 mV/div, connect the test equipment as shown in Figure 5-2.

- For the range 1 V/div no attenuator is required, connect the test equipment as shown in Figure 5-3.

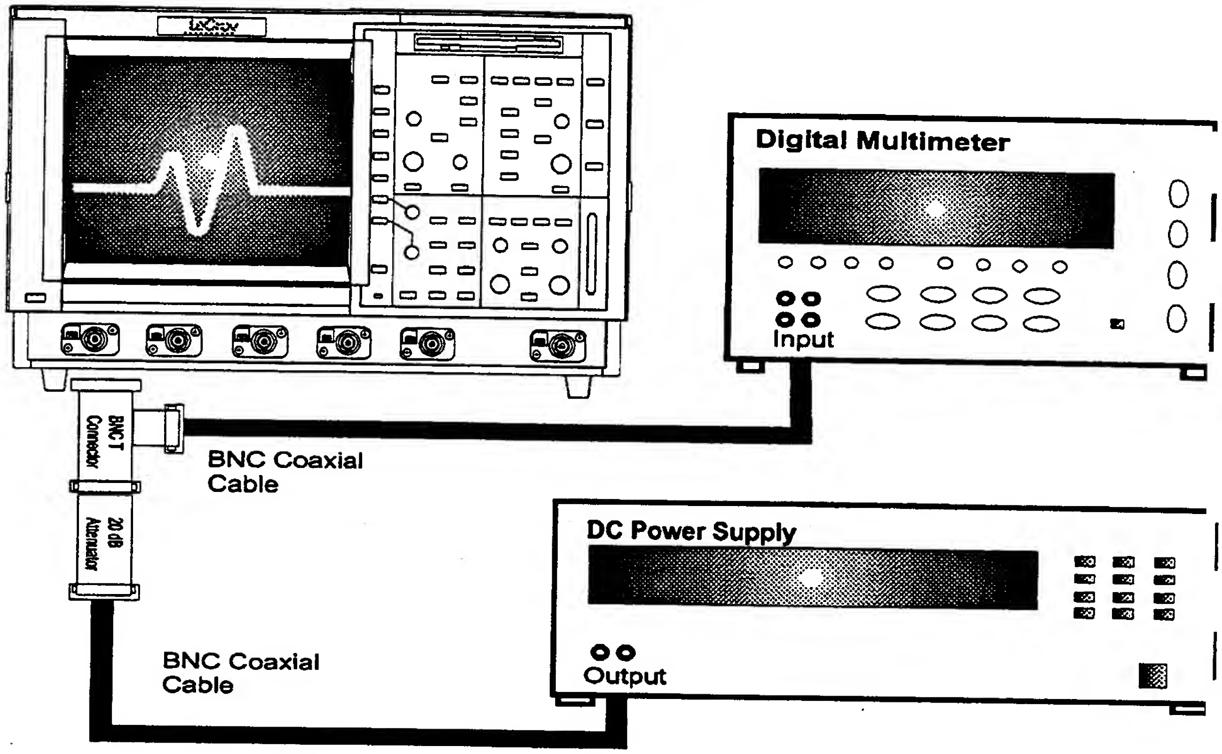


Figure 5-2 : DC 50Ω Accuracy Equipment Setup for 50 and 100 mV/div

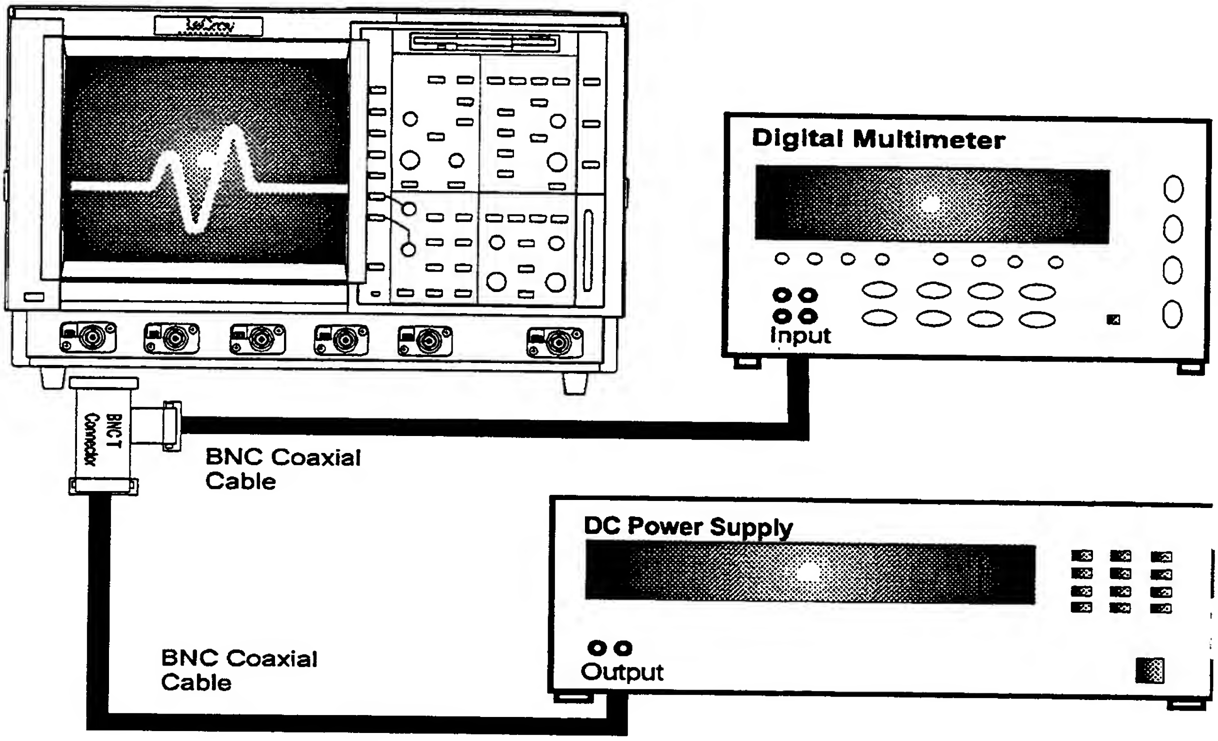


Figure 5-3 : DC 50Ω Accuracy Equipment Setup for 1 V/div.

- For each **DSO Volts/div**, set the output of the external **DC voltage reference source** as shown in Table 8, column PS output.

  1) Connect the DMM and record the **voltage reading** in Table 8, column **DMM.**

  2) Disconnect the DMM from the BNC T connector.

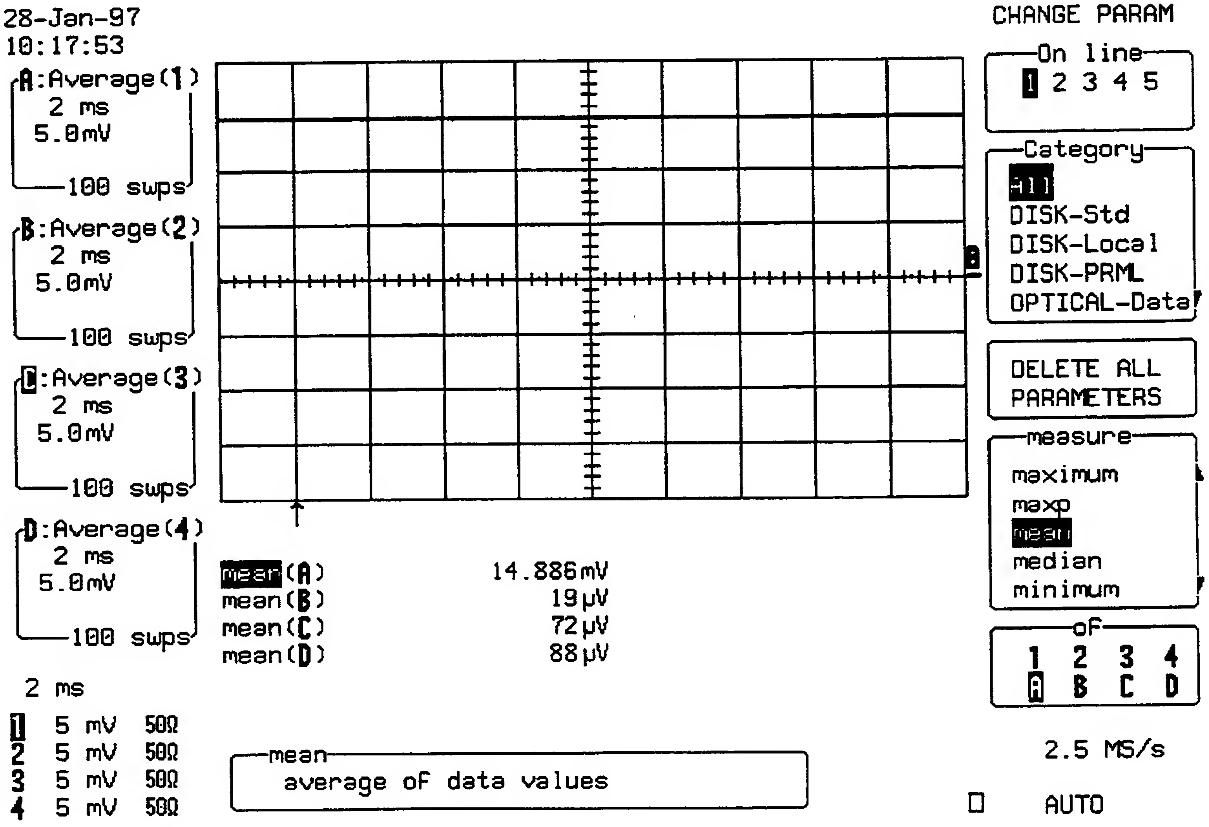
  3) Press **Clear Sweeps**

  4) After 100 sweeps, read off the **DSO mean parameter**, and record the measurement in Table 8, column **Mean.**

- For each DC voltage applied to the DSO input, repeat parts 1), 2), 3) and 4).

- Calculate the **Difference (Δ)** by subtracting the **DMM voltage** reading from the **DSO mean** voltage reading. Record the test result in Table 8, and compare the **Difference (Δ)** to the corresponding limit in the test record.

- Repeat step 5.7.1.a. for the other channels, substituting channel controls and input connector.



```
28-Jan-97
10:17:53
A:Average(1)
  2 ms
  5.0mV
    100 swps
B:Average(2)
  2 ms
  5.0mV
    100 swps
C:Average(3)
  2 ms
  5.0mV
    100 swps
D:Average(4)
  2 ms
  5.0mV
    100 swps

mean(A)        14.886mV
mean(B)            19µV
mean(C)            72µV
mean(D)            88µV

 2 ms
1  5 mV  50Ω
2  5 mV  50Ω
3  5 mV  50Ω
4  5 mV  50Ω

mean
  average of data values

2.5 MS/s
AUTO
```

b. DC 1MΩ

Procedure

- Recall **574p031.PNL** or configure the DSO as shown in 5.7.1.a. and make the following change :

  Input Coupling : **DC 1MΩ** on all 4 Channels

- For 5 mV/div., connect the test equipment as shown in Figure 5-4.

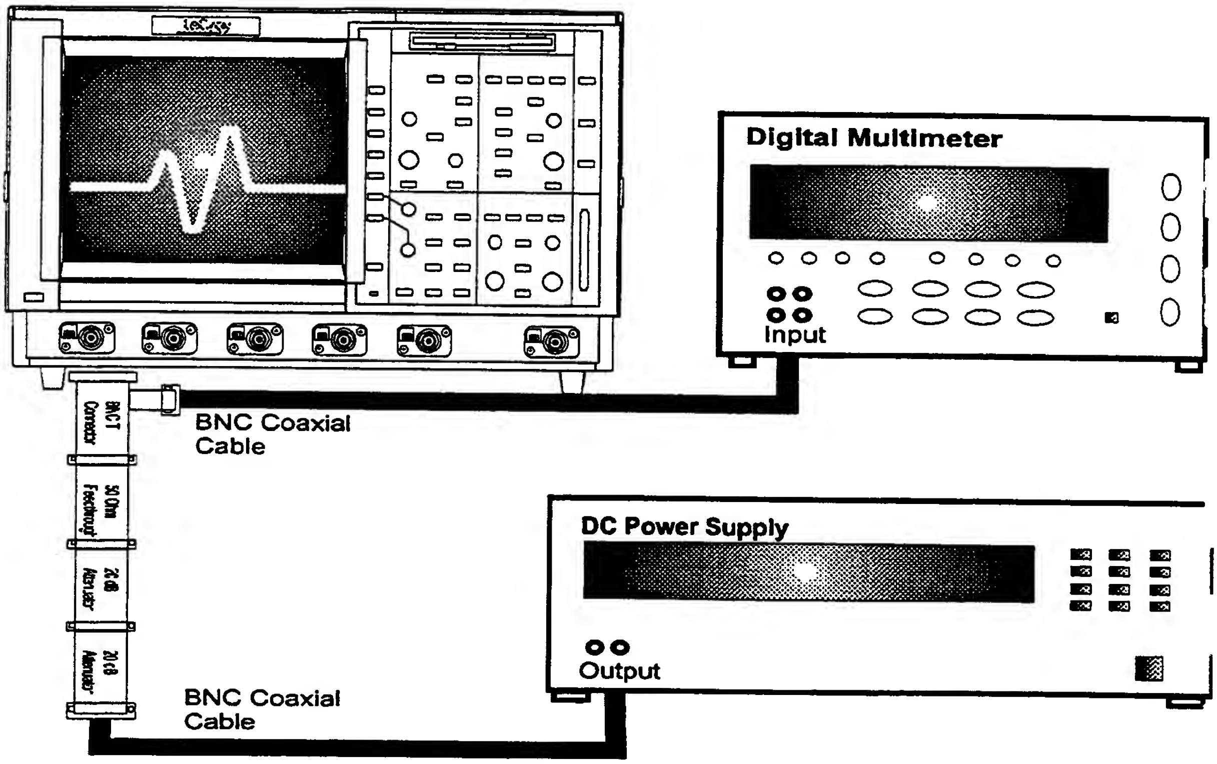


Figure 5-4: DC 1MΩ Accuracy Equipment Setup for 5 mV/div.

- For 100 mV/div, connect the test equipment as shown in Figure 5-5.
- For 5V/div no attenuator is required, connect the test equipment as shown in Figure 5-6.

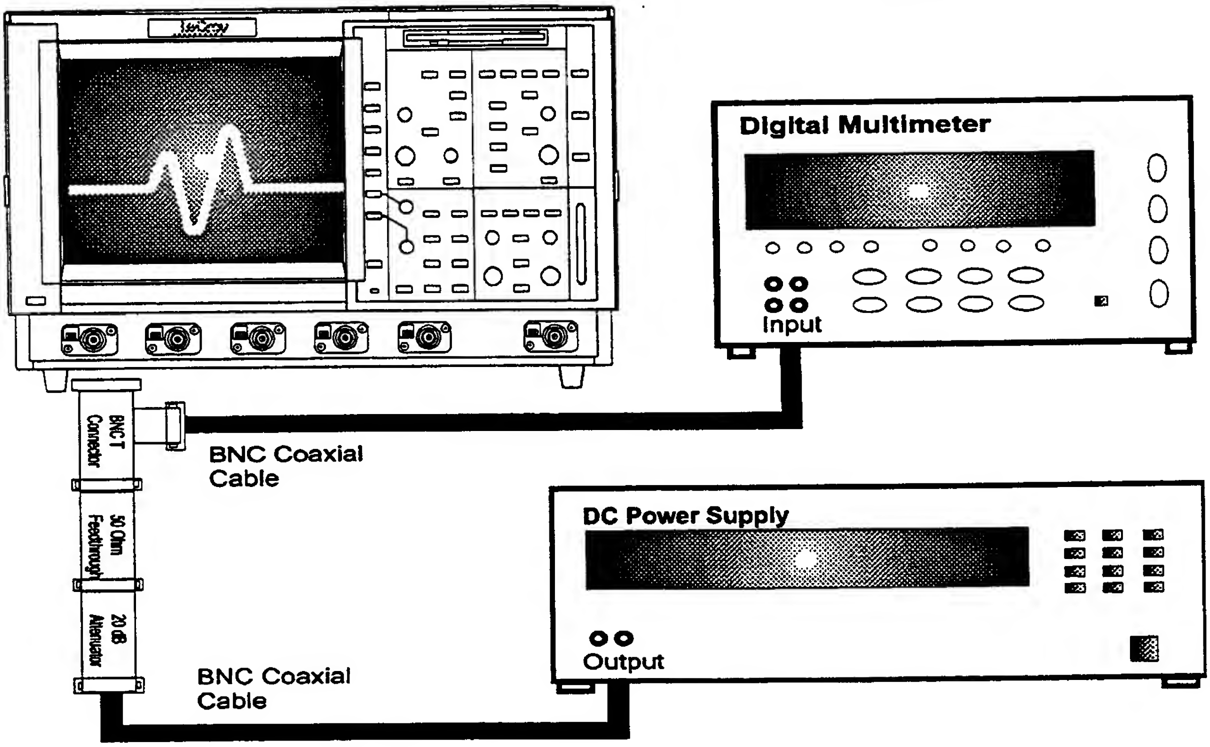


Figure 5-5 : DC 1MΩ Accuracy Equipment Setup for 100 mV/div

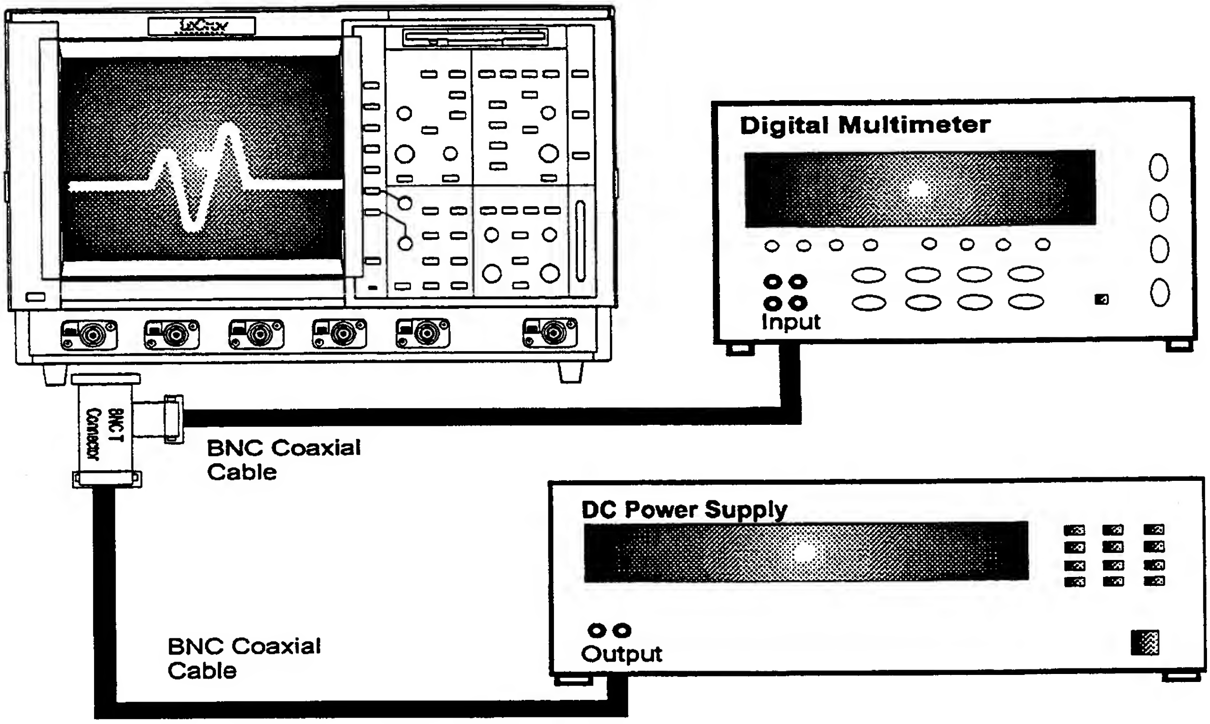


Figure 5-6 : DC 1MΩ Accuracy Equipment Setup for 5V/div.

- For each **DSO Volts/div**, set the output of the external **DC voltage reference source** as shown in Table 9, column PS output.

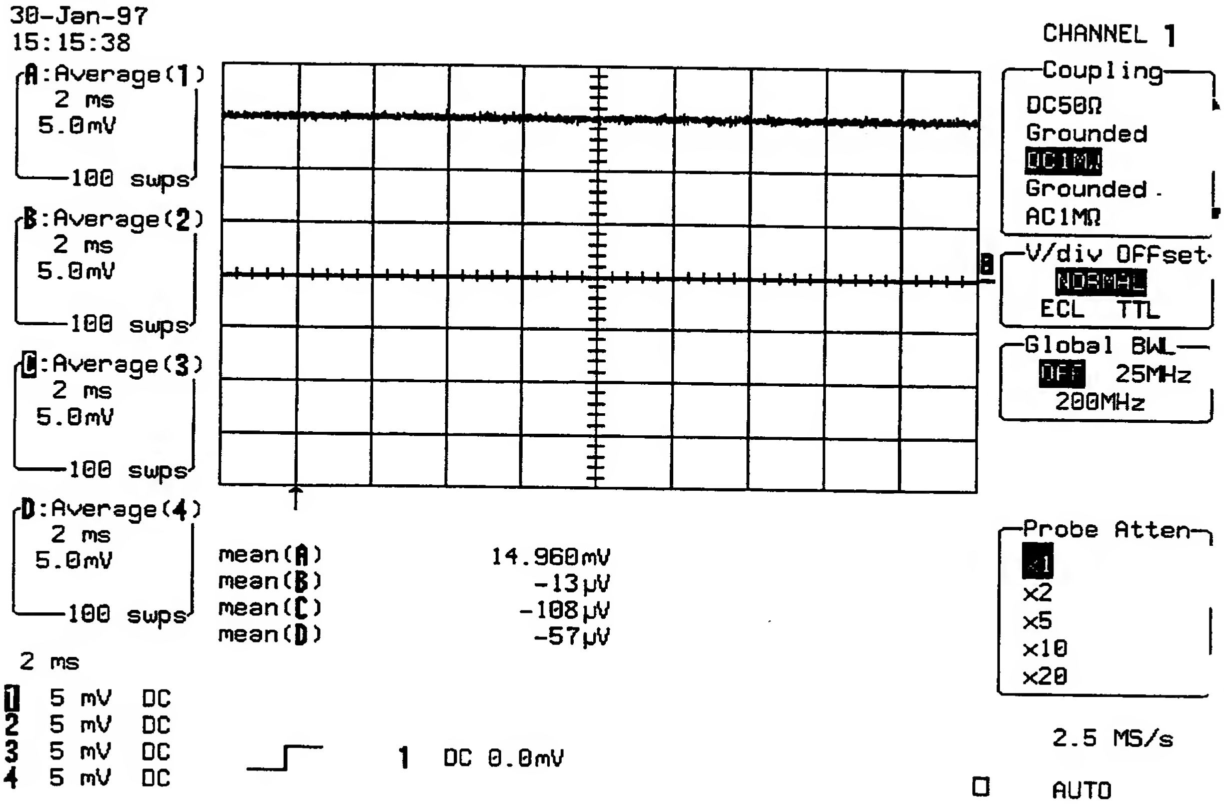
  1) Connect the DMM and record the **voltage reading** in Table 9, column **DMM.**

  2) Disconnect the DMM from the BNC T connector.

  3) Press **Clear Sweeps**

  4) After 100 sweeps, read off the **DSO mean parameter**, and record the measurement in Table 9, column **Mean.**

- For each DC voltage applied to the DSO input, repeat parts 1), 2), 3) and 4).
- Calculate the **Difference (Δ)** by subtracting the **DMM voltage** reading from the **DSO mean** voltage reading. Record the test result in Table 9, and compare the **Difference (Δ)** to the corresponding limit in the test record.
- Repeat step 5.7.1.b. for the other channels, substituting channel controls and input connector.



30-Jan-97
15:15:38

A:Average(1)
2 ms
5.0mV
100 swps

B:Average(2)
2 ms
5.0mV
100 swps

C:Average(3)
2 ms
5.0mV
100 swps

D:Average(4)
2 ms
5.0mV
100 swps

mean(A) 14.960mV
mean(B) -13µV
mean(C) -108µV
mean(D) -57µV

2 ms
1 5 mV DC
2 5 mV DC
3 5 mV DC
4 5 mV DC

1 DC 0.0mV

2.5 MS/s
AUTO

5.7.2 Negative DC Accuracy

a. DC 50Ω

- Recall **574p030.PNL** or configure the DSO as shown in 5.7.1.a.

- Connect the test equipment as shown in either Figure 5-1 or 5-2 or 5-3.

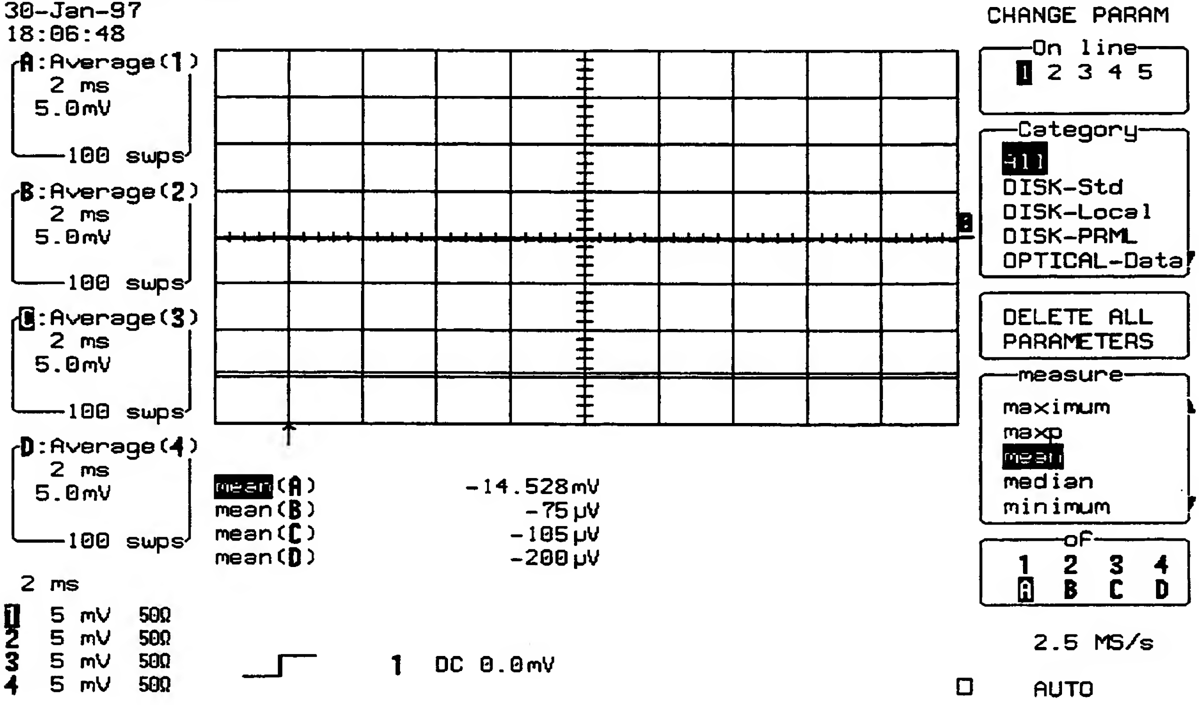
- For each **DSO Volts/div**, set the output of the external **DC voltage reference source** as shown in Table 10, column PS output. (if a banana-BNC adapter is being used it can simply be turned to get the opposite polarity)

  1) Connect the DMM and record the **voltage reading** in Table 10, column **DMM.**
  2) Disconnect the DMM from the BNC T connector.
  3) Press **Clear Sweeps**
  4) After 100 sweeps, read off the **DSO mean parameter**, and record the measurement in Table 10, column **Mean.**

- For each DC voltage applied to the DSO input, repeat parts 1), 2), 3) and 4).

- Calculate the **Difference (Δ)** by subtracting the **DMM voltage** reading from the **DSO mean** voltage reading. Record the test result in Table 10, and compare the **Difference (Δ)** to the corresponding limit in the test record.

- Repeat step 5.7.2.a. for the other channels, substituting channel controls and input connector.



```
30-Jan-97
18:06:48
A:Average(1)   2 ms   5.0mV   100 swps
B:Average(2)   2 ms   5.0mV   100 swps
C:Average(3)   2 ms   5.0mV   100 swps
D:Average(4)   2 ms   5.0mV   100 swps

mean(A)     -14.528mV
mean(B)         -75µV
mean(C)        -105µV
mean(D)        -200µV

2 ms
1  5 mV  50Ω
2  5 mV  50Ω
3  5 mV  50Ω
4  5 mV  50Ω
1 DC 0.0mV
2.5 MS/s
AUTO
```

b. DC 1 MΩ

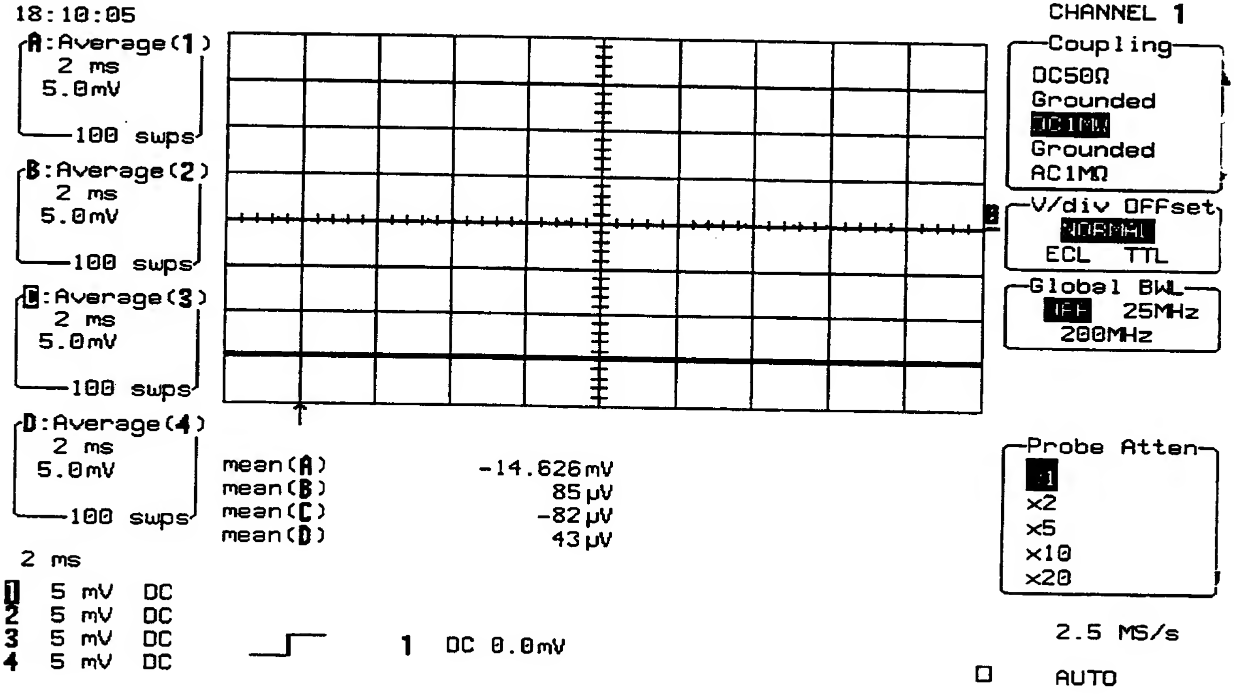
- Recall **574p031.PNL** or configure the DSO as shown in 5.7.1.a. and make the following change :

  Input Coupling : **DC 1 MΩ** on all 4 Channels

- Connect the test equipment as shown in either Figure 5-4 or 5-5 or 5-6.
- For each **DSO Volts/div**, set the output of the external **DC voltage reference source** as shown in Table 11, column PS output.

  1) Connect the DMM and record the **voltage reading** in Table 11, column **DMM.**
  2) Disconnect the DMM from the BNC T connector.
  3) Press **Clear Sweeps**
  4) After 100 sweeps, read off the **DSO mean parameter**, and record the measurement in Table 11, column **Mean.**

- For each DC voltage applied to the DSO input, repeat parts 1), 2), 3) and 4).
- Calculate the **Difference (Δ)** by subtracting the **DMM voltage** reading from the **DSO mean** voltage reading. Record the test result in Table 11, and compare the **Difference (Δ)** to the corresponding limit in the test record.
- Repeat step 5.7.2.b. for the other channels, substituting channel controls and input connector.



```
30-Jan-97
18:10:05
A:Average(1)   2 ms   5.0mV   100 swps
B:Average(2)   2 ms   5.0mV   100 swps
C:Average(3)   2 ms   5.0mV   100 swps
D:Average(4)   2 ms   5.0mV   100 swps

mean(A)   -14.626mV
mean(B)       85 µV
mean(C)      -82 µV
mean(D)       43 µV

2 ms
1  5 mV  DC
2  5 mV  DC
3  5 mV  DC
4  5 mV  DC

1  DC 0.0mV

2.5 MS/s
AUTO
```

5.8 Offset Accuracy

Specifications

Offset range ±1 Volt at 5 mV/div
Accuracy ≤ ±11.2 mV (3 % of full scale +1 % of offset).

Description

The offset test is done at 5 mV/div, for 50Ω and 1MΩ couplings, with a signal of ±1 Volt cancelled by an offset of the other polarity.

5.8.1 Positive Offset Accuracy

a. DC 50Ω

Procedure

- Recall **574p032.PNL** or configure the DSO :

Panel Setups : **Recall FROM DEFAULT SETUP**
Channels Trace ON **Channel 1, Channel 2, Channel 3 & Channel 4**
Input Coupling : **DC 50Ω** on all 4 Channels
Input gain : **5mV/div** on all 4 Channels
Input offset : **+1 Volt** on all 4 Channels
Trigger setup : **Edge**
Trigger on : **1**
Coupling 1 : **DC**
Slope 1 : **Pos.**
Mode : **Auto**
Timebase : **2 msec/div.**
Channel use : **4**
Record up : **50 k**
Channels Trace OFF **Channel 1, Channel 2, Channel 3 & Channel 4**
Zoom+Math Trace ON **A, B, C & D**
Select Math Setup
For Math : **Use at most 5000 points**
Redefine A, B, C, D **Channel 1, Channel 2, Channel 3 & Channel 4**
Use Math ? : **Yes**
Math Type : **Average**
Avg. Type : **Summed**
For : **100 sweeps**

Cursors/Measure : **Parameters**
Mode : **Custom**

Statistics : **off**
Change parameters
On line 1 : **Measure mean of A**
On line 2 : **Measure mean of B**
On line 3 : **Measure mean of C**
On line 4 : **Measure mean of D**

- Connect the test equipment as shown in Figure 5-7.

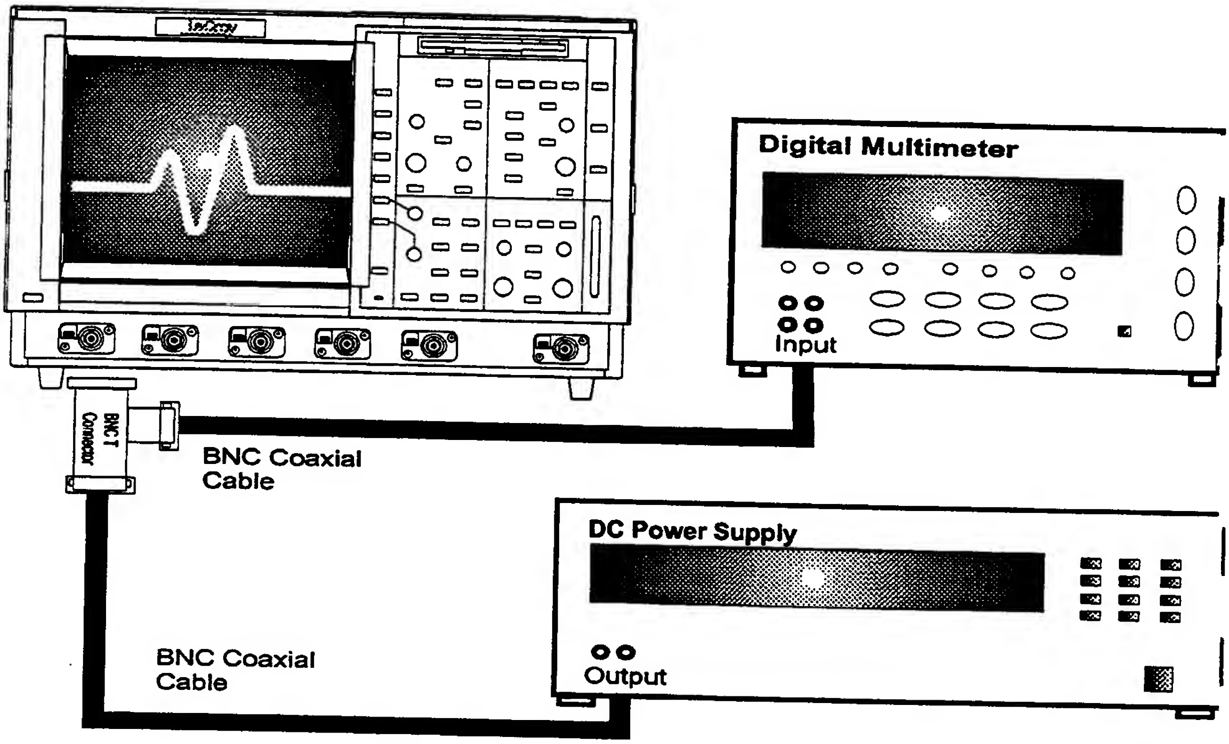
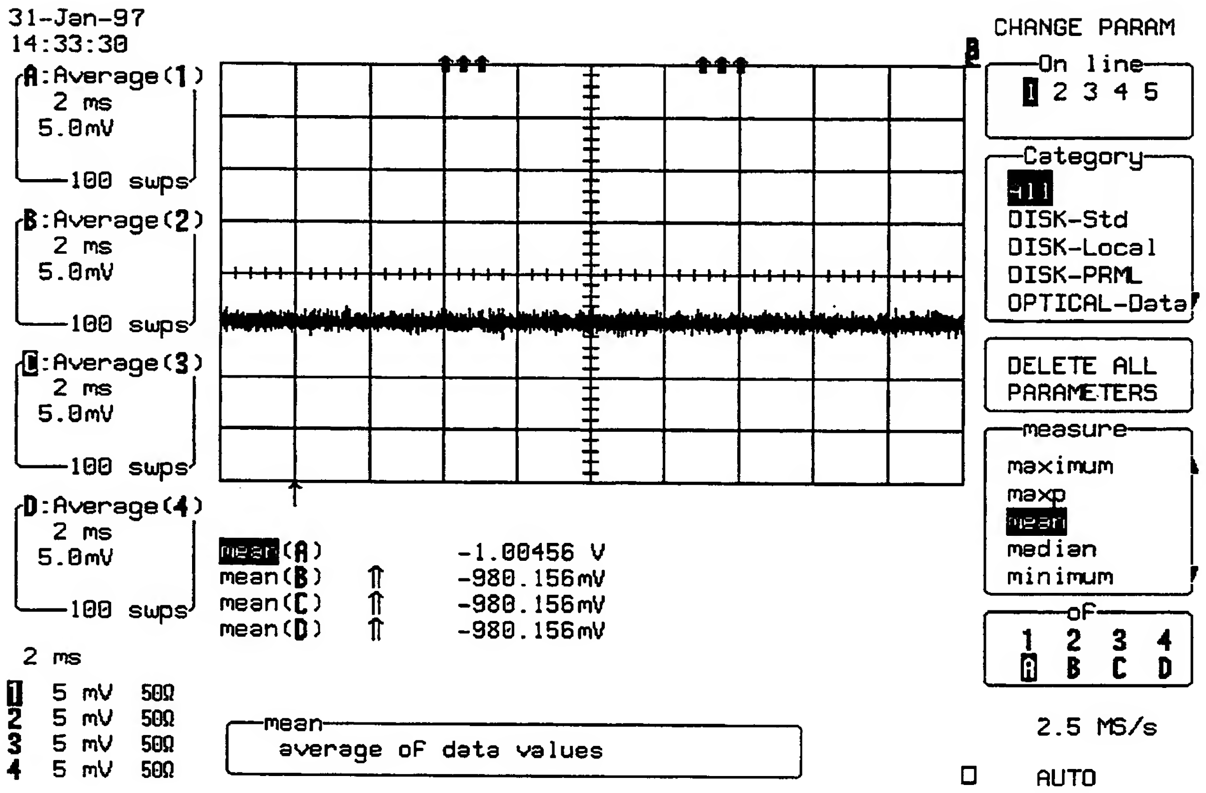


Figure 5-7 : Offset Accuracy Equipment Setup

- Set the output of the external **DC voltage reference source** to **–1 Volt.**
- Verify that the displayed trace A : Average (1) is in the screen, near to the center horizontal graticule line.
- Connect the DMM and record the **voltage reading** in Table 12, column **DMM.**
- Disconnect the DMM from the BNC T connector.
- Press **Clear Sweeps**
- After 100 sweeps, Read off the **DSO Mean parameter** voltage, and record the measurement in Table 12, column **Mean.**



```
31-Jan-97
14:33:30
A:Average(1)
  2 ms
 5.0mV
    100 swps
B:Average(2)
  2 ms
 5.0mV
    100 swps
C:Average(3)
  2 ms
 5.0mV
    100 swps
D:Average(4)
  2 ms
 5.0mV
    100 swps
 2 ms
1  5 mV  50Ω
2  5 mV  50Ω
3  5 mV  50Ω
4  5 mV  50Ω

mean(A)        -1.00456 V
mean(B)   ⇑    -980.156mV
mean(C)   ⇑    -980.156mV
mean(D)   ⇑    -980.156mV

mean
  average of data values

2.5 MS/s
☐  AUTO
```

- Calculate the **Difference (Δ)** by subtracting the **DMM voltage** reading from the **DSO mean** voltage reading. Record the test result in Table 12, and compare the **Difference (Δ)** to the corresponding limit in the test record.
- Repeat the test for the other channels, substituting channel controls and input connector. Record the measurements in Table 12.

b. DC 1MΩ

Procedure

- Recall **574p033.PNL** or configure the DSO as shown in 5.8.1.a. and for each Channel make the following change :

  Input Coupling : **DC 1MΩ**

- Connect the test equipment as shown in Figure 5-7.
- Set the output of the external **DC voltage reference source** to **–1 Volt.**

- Verify that the displayed trace A : Average (1) is in the screen, near to the center horizontal graticule line.
- Connect the DMM and record the **voltage reading** in Table 12, column **DMM**.
- Disconnect the DMM from the BNC T connector.
- Press **Clear Sweeps**
- After 100 sweeps, Read off the **DSO Mean parameter** voltage, and record the measurement in Table 12, column **Mean**.
- Calculate the **Difference (Δ)** by subtracting the **DMM voltage** reading from the **DSO mean** voltage reading. Record the test result in Table 12, and compare the **Difference (Δ)** to the corresponding limit in the test record.
- Repeat the test for the other channels, substituting channel controls and input connector. Record the measurements in Table 12.

5.8.2 Negative Offset Accuracy

a. DC 50Ω

Procedure

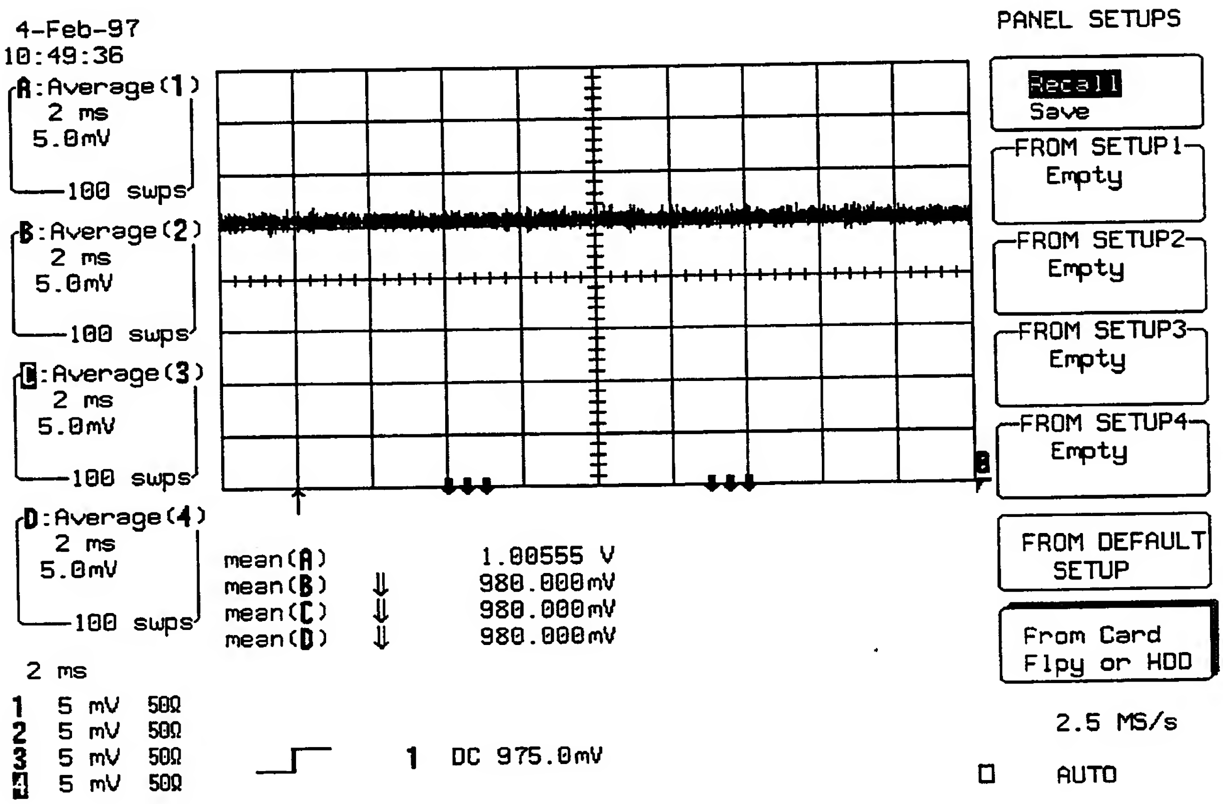
- Recall **574p034.PNL** or configure the DSO as shown in 5.8.1.a. and for each Channel make the following change :

  Input offset : **−1 Volt**

- Connect the test equipment as shown in Figure 5-7.
- Set the output of the external **DC voltage reference source** to **+1 Volt.**
- Verify that the displayed trace A : Average (1) is in the screen, near to the center horizontal graticule line.
- Connect the DMM and record the **voltage reading** in Table 13, column **DMM.**
- Disconnect the DMM from the BNC T connector.
- Press **Clear Sweeps**
- After 100 sweeps, Read off the **DSO Mean parameter** voltage, and record the measurement in Table 13, column **Mean**.

- Calculate the **Difference (Δ)** by subtracting the **DMM voltage** reading from the **DSO mean** voltage reading. Record the test result in Table 13, and compare the **Difference (Δ)** to the corresponding limit in the test record.

- Repeat the test for the other channels, substituting channel controls and input connector. Record the measurements in Table 13.



4-Feb-97
10:49:36

A:Average(1)
2 ms
5.0mV
100 swps

B:Average(2)
2 ms
5.0mV
100 swps

C:Average(3)
2 ms
5.0mV
100 swps

D:Average(4)
2 ms
5.0mV
100 swps

mean(A) 1.00555 V
mean(B) ⇓ 980.000mV
mean(C) ⇓ 980.000mV
mean(D) ⇓ 980.000mV

2 ms
1 5 mV 50Ω
2 5 mV 50Ω
3 5 mV 50Ω
4 5 mV 50Ω

1 DC 975.0mV

2.5 MS/s
☐ AUTO

b. DC 1MΩ

- Recall **574p035.PNL** or configure the DSO as shown in 5.8.1.a. and for each Channel make the following changes :

  Input Coupling : **DC 1MΩ**

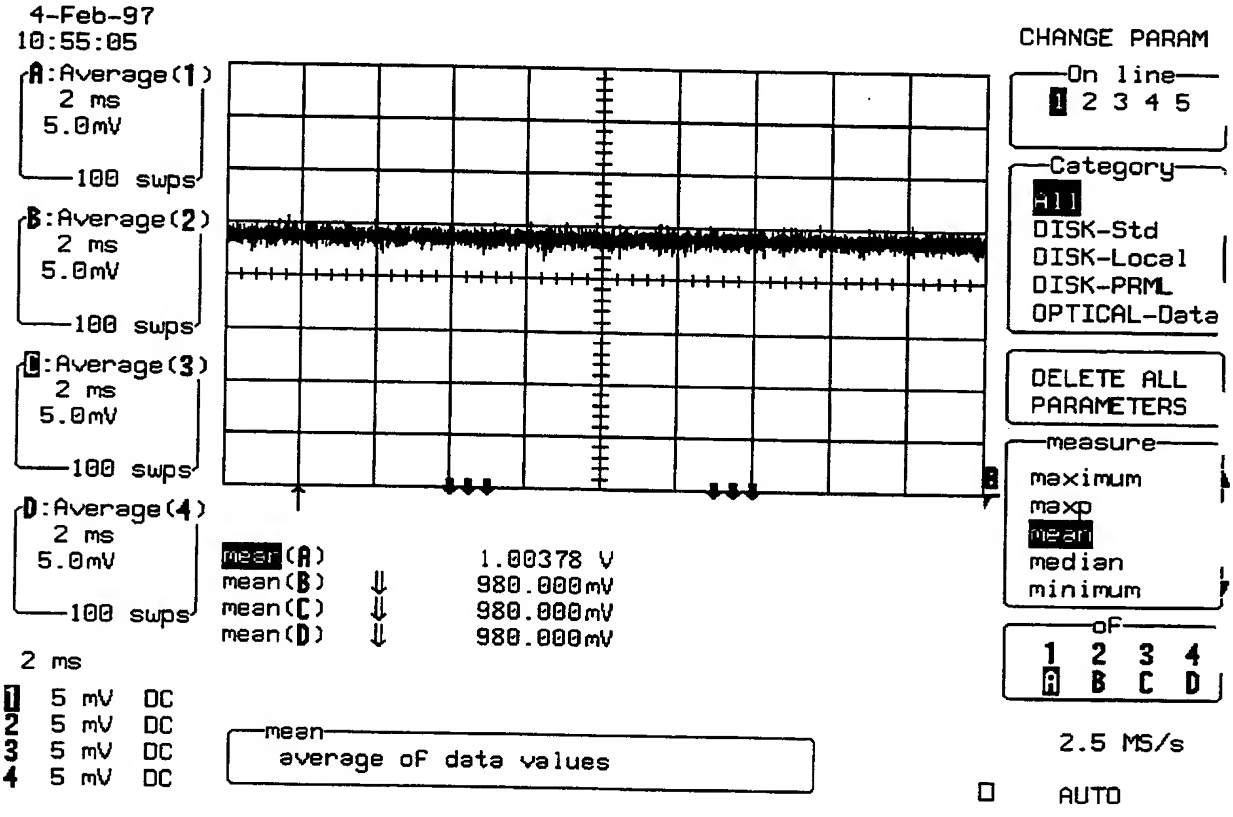
  Input offset : **–1 Volt**

- Connect the test equipment as shown in Figure 5-7.

- Set the output of the external **DC voltage reference source** to **+1 Volt.**

- Verify that the displayed trace A : Average (1) is in the screen, near to the center horizontal graticule line.

- Connect the DMM and record the **voltage reading** in Table 13, column **DMM.**
- Disconnect the DMM from the BNC T connector.
- Press **Clear Sweeps**
- After 100 sweeps, Read off the **DSO Mean parameter** voltage, and record the measurement in Table 13, column **Mean.**
- Calculate the **Difference (Δ)** by subtracting the **DMM voltage** reading from the **DSO mean** voltage reading. Record the test result in Table 13, and compare the **Difference (Δ)** to the corresponding limit in the test record.
- Repeat the test for the other channels, substituting channel controls and input connector. Record the measurements in Table 13.



```
4-Feb-97
10:55:05
A:Average(1)
  2 ms
 5.0mV
      100 swps
B:Average(2)
  2 ms
 5.0mV
      100 swps
C:Average(3)
  2 ms
 5.0mV
      100 swps
D:Average(4)
  2 ms
 5.0mV
      100 swps

mean(A)      1.00378 V
mean(B) ⇓    980.000mV
mean(C) ⇓    980.000mV
mean(D) ⇓    980.000mV

 2 ms
1  5 mV  DC
2  5 mV  DC
3  5 mV  DC
4  5 mV  DC

mean
 average of data values

2.5 MS/s
AUTO
```

5.9 Bandwidth

5.9.1 Description

The purpose of this test is to ensure that the entire system has a bandwidth of at least 1 GHz. An external source is used as the reference to provide a signal where amplitude and frequency are well controlled.
The amplitude of the generator as a function of frequency and power is calibrated using an HP8482A sensor on an HP436A power meter or equivalent.

Specifications

50Ω : DC to at least 1 GHz (–3 dB) at 10 mV/div. and above.

1MΩ : DC to 400 MHz typical at 100 mV/div

a. DC 50Ω

- Recall **574p036.PNL** or configure the DSO :

Panel Setups : **Recall FROM DEFAULT SETUP**
Channels Trace ON **Channel 1, Channel 2, Channel 3 & Channel 4**
Input Coupling : **DC 50Ω** on all 4 Channels
Input gain : **50mV/div** on all 4 Channels
Input offset : **0 mV** on all 4 Channels
Trigger setup : **Edge**
Trigger on : **Line**
Slope line : **Pos**
Mode : **Auto**
Timebase : **10 µsec/div.**
Channel use : **4**
Record up : **50 k**
Cursors/Measure : **Parameters**
Mode : **Custom**
Statistics : **On**
Change parameters
On line 1 : **Sdev of 1**
On line 2 : **Sdev of 2**
On line 3 : **Sdev of 3**
On line 4 : **Sdev of 4**

- Connect the HP8482A power sensor to the power meter.

- Zero and **calibrate** the HP8482A power sensor using the power meter **Power Ref output**.

- Connect a **BNC adapter** to the HP8482A power sensor.
- Connect a 5ns 50 BNC cable to the **RF output** of the HP8648B generator and then through the necessary adapters to the power sensor.

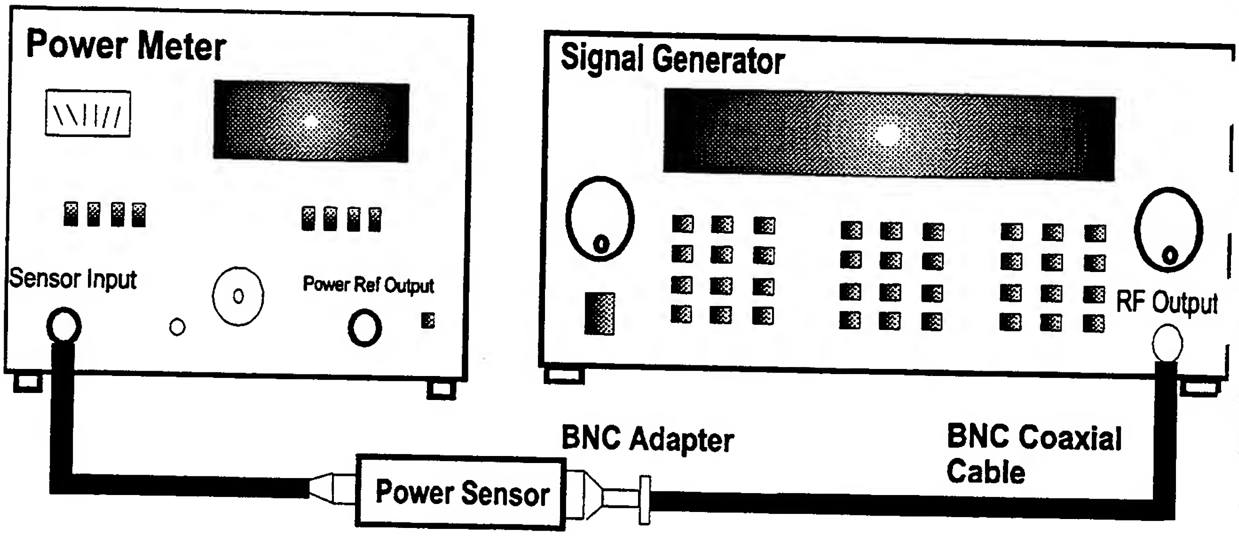


Figure 5-8 : Power Meter Equipment Setup

- Set the generator frequency to **300 KHz**
- Set the generator amplitude to measure **0.200 mW** on the power meter.
- Read the displayed **generator output amplitude,** and record it in the third column of Table 14.
- Repeat the above measurement for **1.1 MHz**, **30.1 MHz**, **250.1 MHz**, **750.1 MHz** & **1000.1 MHz**. Record the generator output amplitude readout in the third column of Table 14.
- Disconnect the **RF output** of the HP8648B generator from the HP8482A power sensor.
- Connect the **RF output** of the HP8648B generator through the 5ns 50 Ohm BNC cable into Channel 1.
- Set the generator frequency to **300 KHz**.
- From the generator, apply the **recorded generator signal amplitude** to Channel 1.
- Press **Clear Sweeps**.

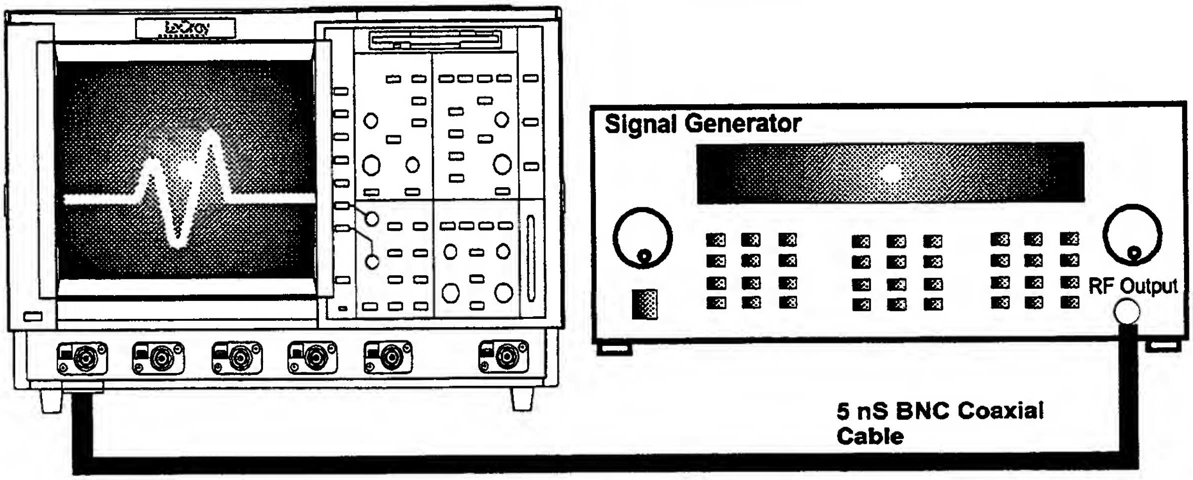
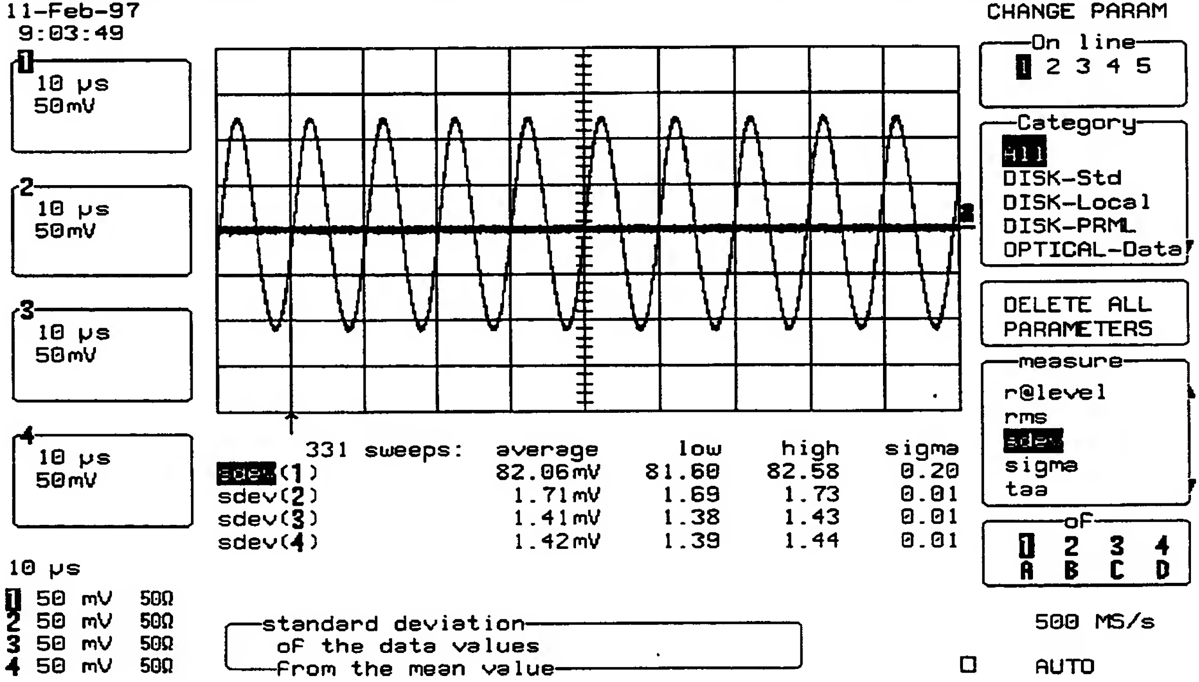


Figure 5-9 : 50Ω Bandwidth Equipment Setup

- Measure for at least 100 sweeps, record the average value of **sdev(1)** inTable14
- Repeat the above 3 steps for Channel 2, Channel 3 & Channel 4 substituting channel controls and input connector. Record the measurements in Table 14.
- Repeat the above measurement for all channels for 1.1 MHz, 30.1 MHz, 250.1 MHz, 750.1 MHz and 1000.1 MHz and record the values in Table 14.
- Calculate the ratio to .3 MHz for each frequency, $sdev_{1.1}/sdev_{0.3}$,$sdev_{30.1}/sdev_{0.3}$ ...$sdev_{1000.1}/sdev_{0.3}$, and compare the results to the limits in the test record.



```
11-Feb-97
 9:03:49

         331 sweeps:   average     low    high   sigma
sdev(1)               82.06mV    81.60   82.58    0.20
sdev(2)                1.71mV     1.69    1.73    0.01
sdev(3)                1.41mV     1.38    1.43    0.01
sdev(4)                1.42mV     1.39    1.44    0.01

10 µs
1 50 mV  50Ω
2 50 mV  50Ω
3 50 mV  50Ω
4 50 mV  50Ω

standard deviation
  of the data values
from the mean value

500 MS/s
☐     AUTO
```

- Recall **574p037.PNL** or configure the DSO as shown in 5.9.1.a. and for each Channel make the following change :

  Input gain : **100mV/div**

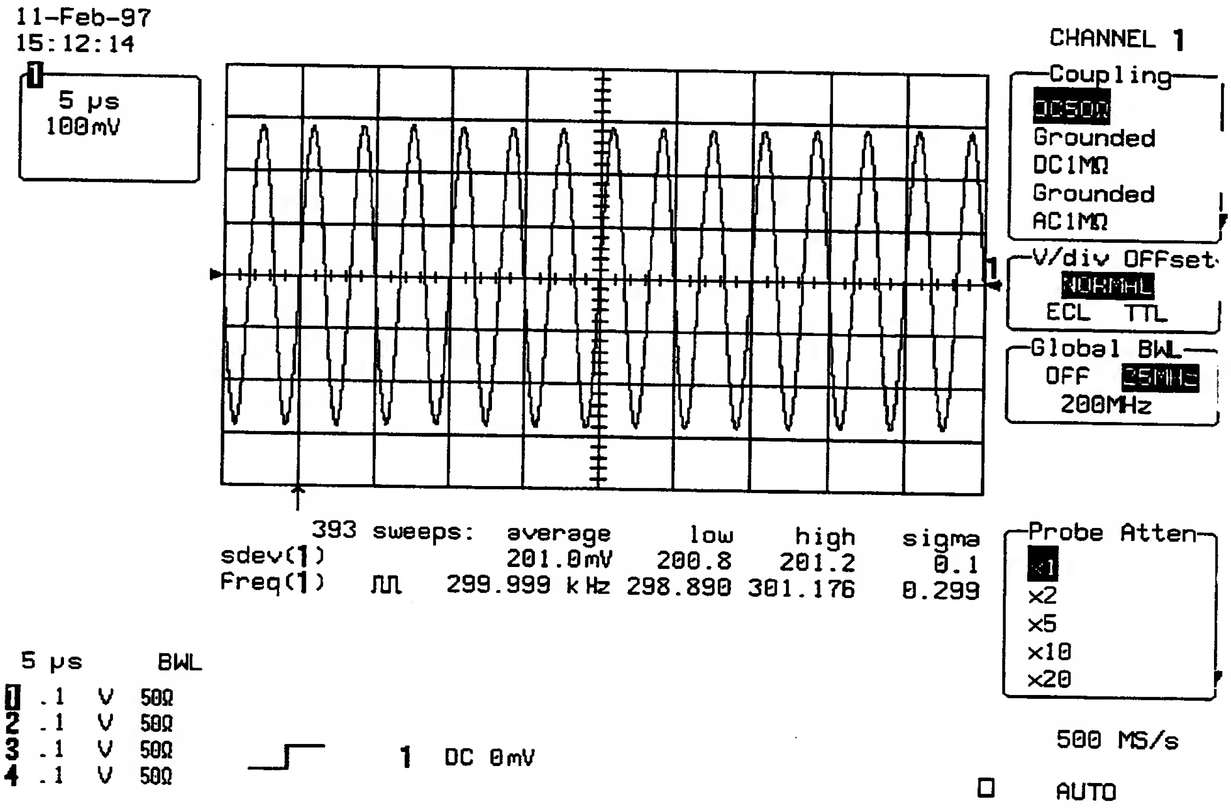
- Connect the test equipment as shown in Figure 5-8.
- Set the generator frequency to **300 kHz**
- Set the generator amplitude to measure **0.800 mW** on the power meter.
- Read the displayed **generator output amplitude,** and record it in the third column of Table 15.
- Repeat the above measurement for **1.1 MHz, 30.1 MHz, 250.1 MHz, 750.1 MHz & 1000.1 MHz.** Record the generator output amplitude readout in the third column of Table 15.
- Disconnect the **RF output** of the HP8648B generator from the HP8482A power sensor.
- Connect the test equipment as shown in Figure 5-9.
- Set the generator frequency to **300 kHz.**
- From the generator, apply the **recorded generator signal amplitude** to Channel 1.
- Press **Clear Sweeps.**
- Measure for at least 100 sweeps, record the average value of **sdev(1)** inTable15
- Repeat the above 3 steps for Channel 2, Channel 3 & Channel 4 substituting channel controls and input connector. Record the measurements in Table 15.
- Repeat the above measurement for all channels for 1.1 MHz, 30.1 MHz, 250.1 MHz, 750.1 MHz and 1000.1 MHz and record the values in Table 15.
- Calculate the ratio to .3 MHz for each frequency, $sdev_{1.1}/sdev_{0.3}, sdev_{30.1}/sdev_{0.3}$ ...$sdev_{1000.1}/sdev_{0.3}$, and compare the results to the limits in the test record.

b. DC 50Ω with Bandwidth Limiter On

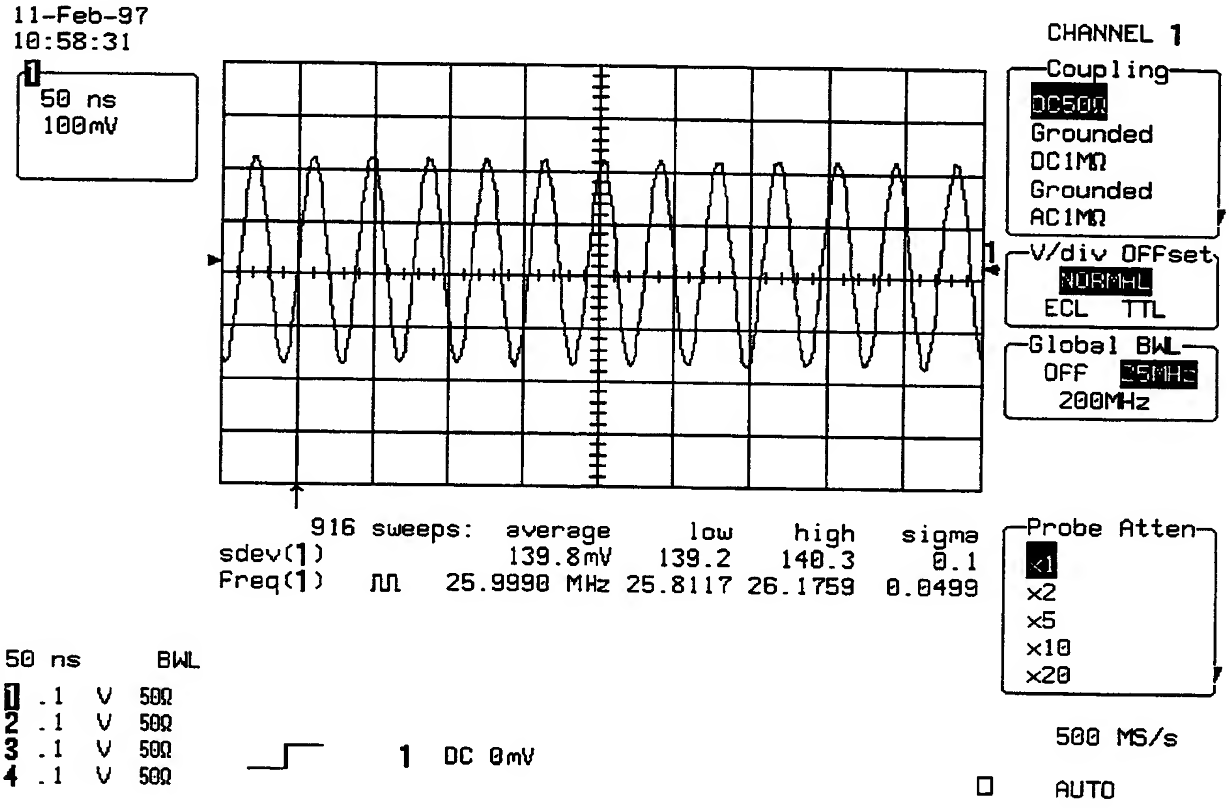
- Recall **574p038.PNL** or configure the DSO

Panel Setups : **Recall FROM DEFAULT SETUP**
Channels Trace ON **Channel 1**
Input Coupling : **DC 50Ω**
Global BWL : **25 MHz**
Input gain : **100 mV/div.**
Input offset : **0 mV**
Trigger setup : **Edge**
Trigger on : **1**
Slope line : **Pos**
Mode : **Auto**
Timebase : **5 µsec/div.**
Channel use : **4**
Record up : **50 k**
Cursors/Measure : **Parameters**
Mode : **Custom**
Statistics : **On**
Change parameters
On line 1 : **Sdev of 1**
On line 2 : **Freq of 1**

- Connect the test equipment as shown in Figure 5-9.
- Set the generator frequency to **300 kHz.**
- Adjust the generator signal amplitude to measure **sdev(1) = 200 mV.**
- Set Timebase : **50 nsec/div.**
- Increase the generator frequency until **sdev(1) = 140 mV.** (typically 25 MHz)
- Press **Clear Sweeps**
- When **sdev(1) = 140 mV,** record Freq(1) in Table 16.
- Check that the frequency is within the limits specified in Table 16.



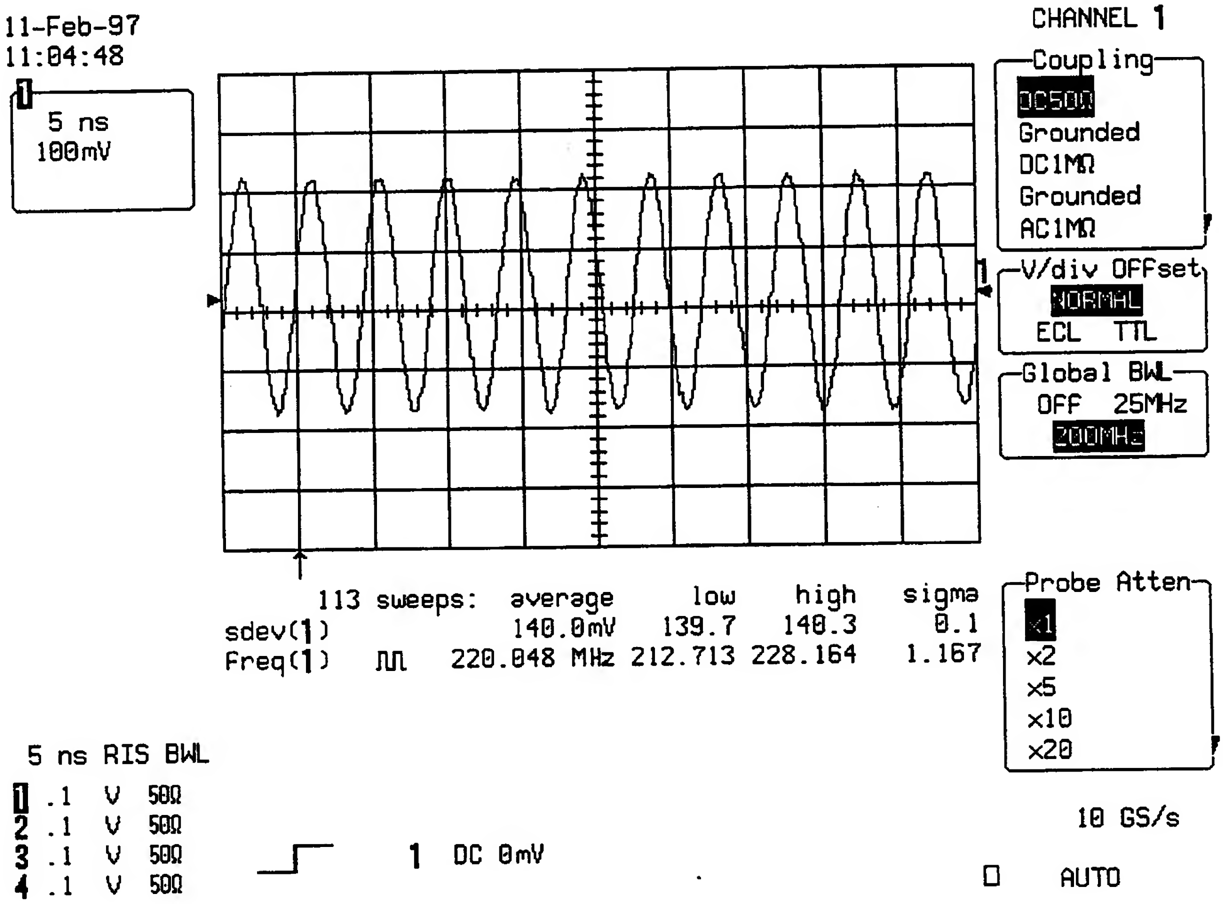
```
11-Feb-97
15:12:14
1
  5 µs
 100mV

                                                                CHANNEL 1
                                                                Coupling
                                                                DC50Ω
                                                                Grounded
                                                                DC1MΩ
                                                                Grounded
                                                                AC1MΩ
                                                                V/div OFFset
                                                                  NORMAL
                                                                ECL   TTL
                                                                Global BWL
                                                                OFF  25MHz
                                                                  200MHz

          393 sweeps:  average     low     high    sigma     Probe Atten
sdev(1)                201.0mV   200.8    201.2      0.1      x1
Freq(1)    ЛЛ    299.999 kHz 298.890  301.176    0.299      x2
                                                              x5
 5 µs      BWL                                                x10
                                                              x20
1 .1  V  50Ω
2 .1  V  50Ω                                                 500 MS/s
3 .1  V  50Ω       _Г     1  DC 0mV
4 .1  V  50Ω                                            ☐     AUTO
```



```
11-Feb-97
10:58:31
1
  50 ns
 100mV

                                                                CHANNEL 1
                                                                Coupling
                                                                DC50Ω
                                                                Grounded
                                                                DC1MΩ
                                                                Grounded
                                                                AC1MΩ
                                                                V/div OFFset
                                                                  NORMAL
                                                                ECL   TTL
                                                                Global BWL
                                                                OFF  25MHz
                                                                  200MHz

          916 sweeps:  average     low     high    sigma     Probe Atten
sdev(1)                139.8mV   139.2    140.3      0.1      x1
Freq(1)    ЛЛ   25.9990 MHz 25.8117  26.1759   0.0499      x2
                                                              x5
 50 ns     BWL                                                x10
                                                              x20
1 .1  V  50Ω
2 .1  V  50Ω                                                 500 MS/s
3 .1  V  50Ω       _Г     1  DC 0mV
4 .1  V  50Ω                                            ☐     AUTO
```

- Set Global BWL : **200 MHz**

- Set Timebase : **5 nsec/div.**
- Increase the generator frequency until **sdev(1) = 140 mV.** (typically 200 MHz)



```
11-Feb-97
11:04:48

1  5 ns
   100mV

           113 sweeps:  average       low      high     sigma
sdev(1)                 140.0mV      139.7    140.3      0.1
Freq(1)    ЛЛ   220.048 MHz  212.713  228.164    1.167

5 ns RIS BWL
1 .1  V  50Ω
2 .1  V  50Ω
3 .1  V  50Ω
4 .1  V  50Ω
```

- Press **Clear Sweeps**
- When **sdev(1) = 140 mV,** record Freq(1) in Table 16.
- Repeat the 25 MHz and 200 MHz Bandwidth limiter tests for the other channels, substituting channel controls and input connector.
- Recall **574p039.PNL** for Channel 2, **574p040.PNL** for Channel3 **574p041.PNL** for Channel 4, or configure the DSO as shown in 5.9.1.b. and make the necessary changes.
- Record the test results in Table 16, and compare the results to the limits.

5.9.2 DC 1MΩ

- Recall **574p042.PNL** or configure the DSO :

Panel Setups : **Recall FROM DEFAULT SETUP**
Channels Trace ON **Channel 1, Channel 2, Channel 3 & Channel 4**
Input Coupling : **DC 1MΩ** on all 4 Channels
Input gain : **100 mV/div.** on all 4 Channels
Input offset : **0 mV** on all 4 Channels

Trigger setup : **Edge**
Trigger on : **Line**
Slope line : **Pos**
Mode : **Auto**
Timebase : **10 µsec/div.**
Channel use : **4**
Record up : **50 k**

Cursors/Measure : **Parameters**
Mode : **Custom**
Statistics : **On**
Change parameters
On line 1 : **Sdev of 1**
On line 2 : **Sdev of 2**
On line 3 : **Sdev of 3**
On line 4 : **Sdev of 4**

- Connect the test equipment as shown in Figure 5-10.

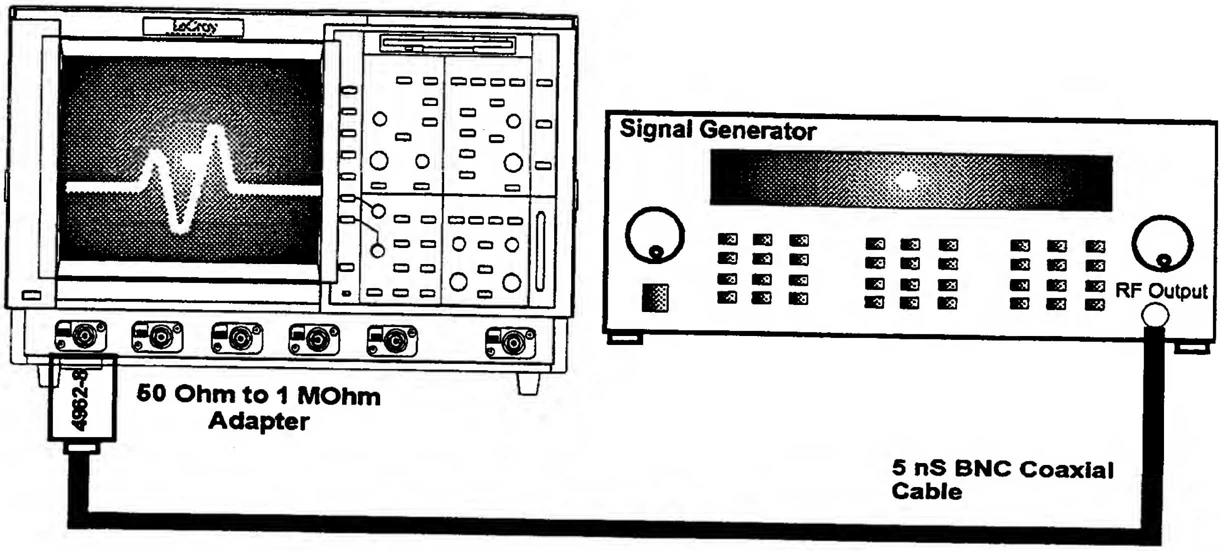
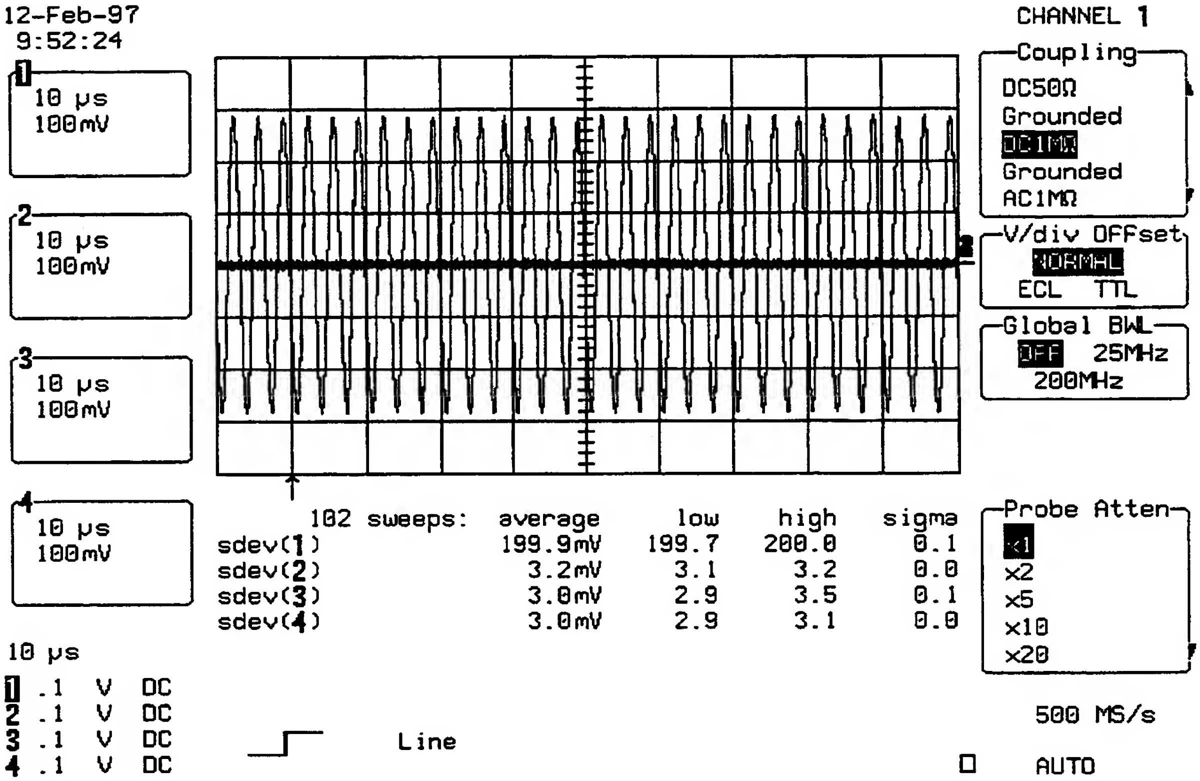


Figure 5-10 : 1MΩ Bandwidth Equipment Setup

- Set the generator frequency to **300 kHz**.

- Adjust the generator signal amplitude to measure **sdev(1) = 200 mV**.



```
12-Feb-97
 9:52:24
                                                                CHANNEL 1
            102 sweeps:  average    low    high   sigma
sdev(1)                  199.9mV   199.7   200.0   0.1
sdev(2)                    3.2mV     3.1     3.2   0.0
sdev(3)                    3.0mV     2.9     3.5   0.1
sdev(4)                    3.0mV     2.9     3.1   0.0

10 µs
1 .1  V  DC
2 .1  V  DC
3 .1  V  DC
4 .1  V  DC                    Line                     500 MS/s
                                                        AUTO
```

- Disconnect the coaxial cable from the 4962-9 adapter. Connect the test equipment as shown in Figure 5-11.

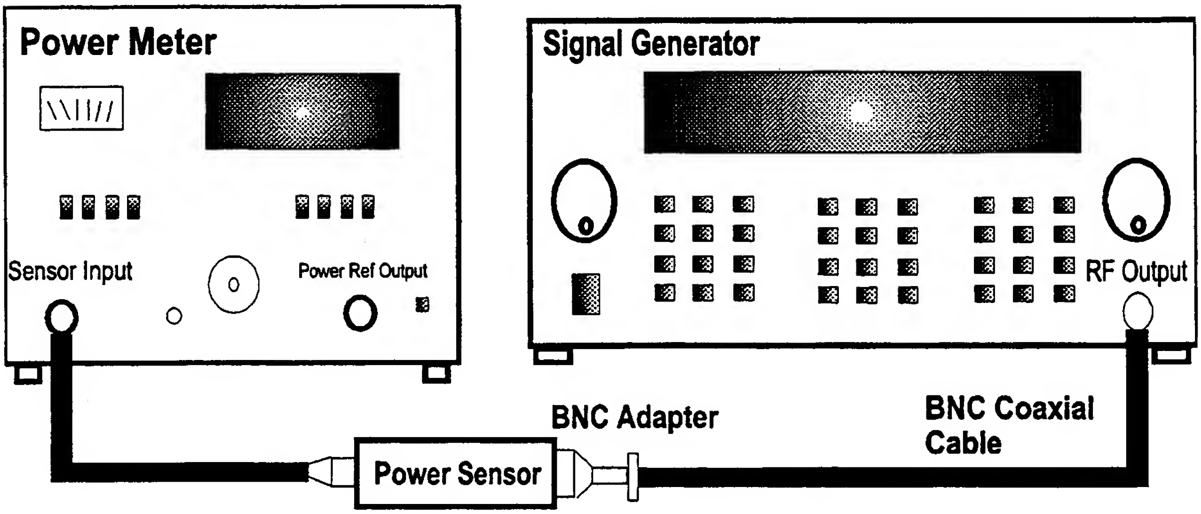
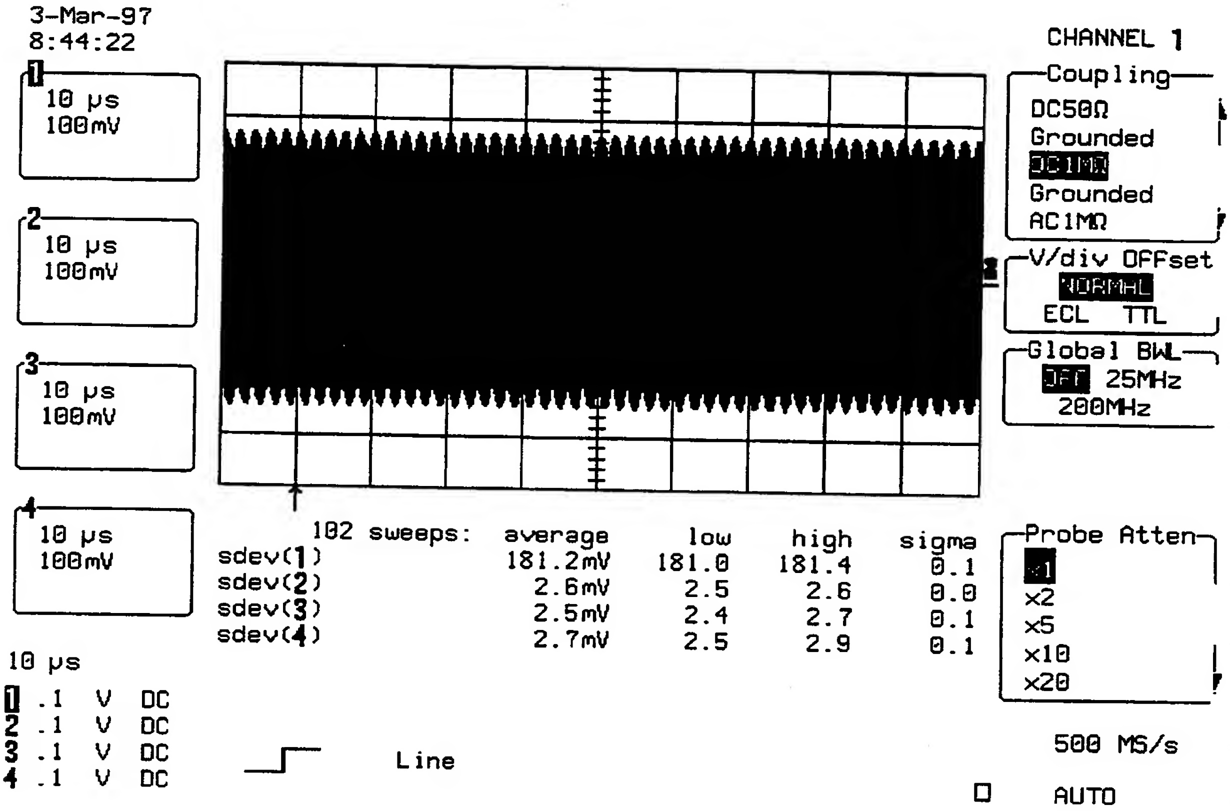


Figure 5-11 : Power Meter Equipment Setup

- Record the displayed power meter value in mW.

BMR 31 MAR 04

- Set the generator frequency to 360 ~~400.1~~ MHz.
- Now fine adjust the generator amplitude output until the power meter readout indicates the value measured just above at 300 kHz.
- Reconnect the signal generator to DSO Channel 1, as shown in Figure 5-10.
- Press **Clear Sweeps**.
- Measure for at least **100 sweeps**, record the average value of **sdev(1)** in Table17.
- Repeat the above steps for Channel 2, Channel 3 & Channel 4, substituting channel controls and input connector.
- Record the sdev measurements in Table17.
- Calculate the ratio **sdev400.1/sdev0.3** for each Channel, and test each value against the limits shown in the test record.



```
3-Mar-97
8:44:22                                                        CHANNEL 1
                                                               Coupling
1  10 µs   100mV                                               DC50Ω
2  10 µs   100mV                                               Grounded
3  10 µs   100mV                                               DC1MΩ
4  10 µs   100mV                                               Grounded
                                                               AC1MΩ
                                                               V/div OFFset
                                                               NORMAL
                                                               ECL  TTL
                                                               Global BWL
                                                               OFF  25MHz
                                                                    200MHz

          102 sweeps:   average    low     high    sigma       Probe Atten
sdev(1)                 181.2mV   181.0   181.4    0.1         x1
sdev(2)                   2.6mV     2.5     2.6    0.0         x2
sdev(3)                   2.5mV     2.4     2.7    0.1         x5
sdev(4)                   2.7mV     2.5     2.9    0.1         x10
                                                               x20
10 µs
1  .1  V  DC                                                   500 MS/s
2  .1  V  DC
3  .1  V  DC                 Line                              ☐  AUTO
4  .1  V  DC
```

5.10 Trigger Level

5.10.1 Description

The trigger capabilities are tested for several cases of the standard edge trigger :

- Channel (internal), and External Trigger sources
- Three DC levels : –3, 0, +3 major screen divisions
- DC, HFREJ coupling
- Positive and negative slopes

5.10.2 Channel Trigger at 0 Division Threshold

a. DC Coupling

Recall **574p043.PNL** or configure the DSO :

Panel Setups : **Recall FROM DEFAULT SETUP**
Channels Trace ON **Channel 1, Channel 2, Channel 3 & Channel 4**
Input Coupling : **DC 50Ω on all 4 Channels**
Input gain : **100 mV/div. on all 4 Channels**
Input offset : **0 mV on all 4 Channels (use show status to verify)**

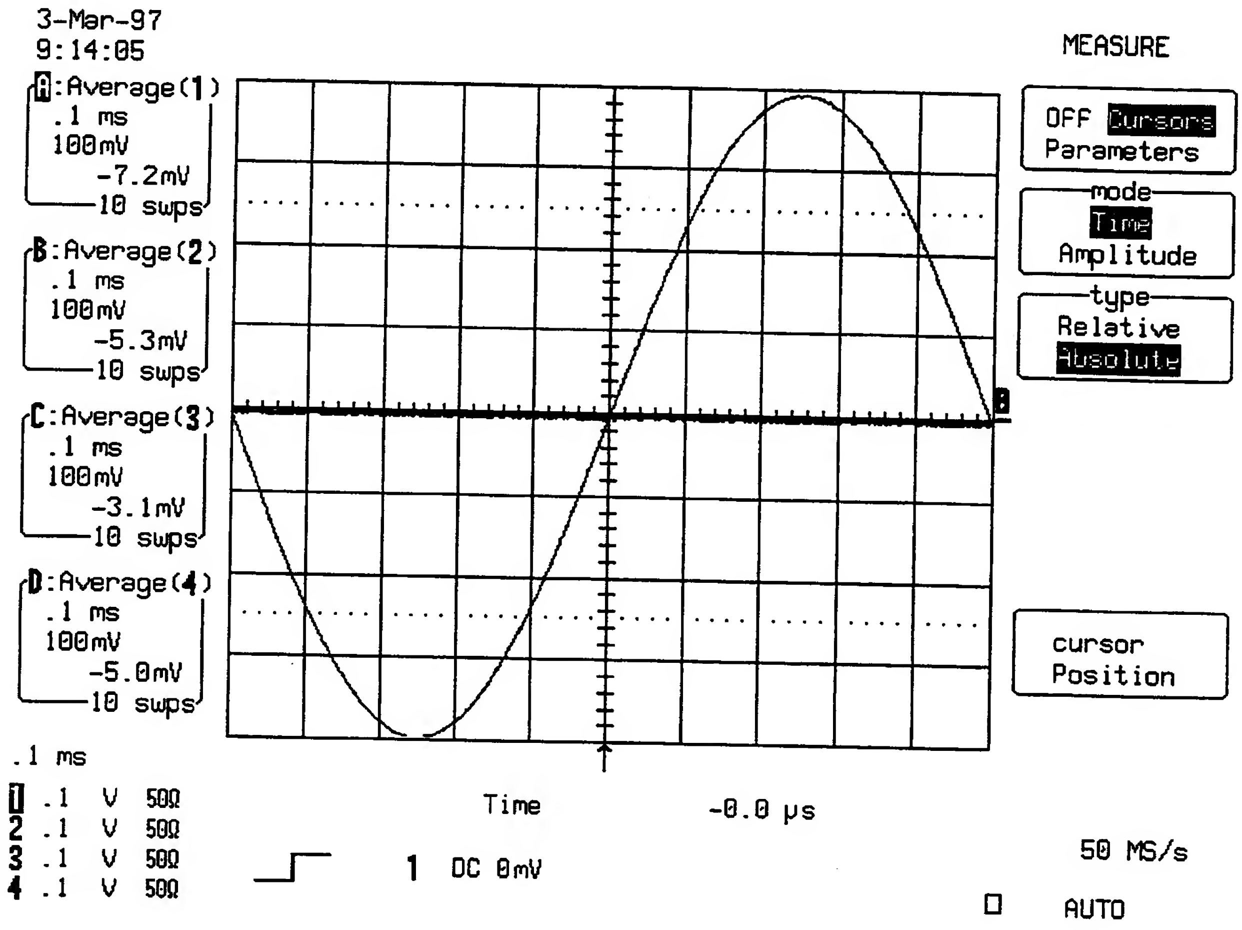
Trigger setup : **Edge**
Trigger on : **1**
Slope 1 : **Pos**
Coupling : **DC**
Mode : **Auto**
Set Trigger level : **DC 0.0 mV**
Pre-Trigger Delay : **50 %**

Timebase : **0.1 msec/div.**
Record up to : **50 k samples**

Channels Trace OFF **Channel 1, Channel 2, Channel 3 & Channel 4**

Zoom+Math Trace ON **A, B, C & D**
Select Math Setup
For Math : **Use at most 5000 points**
Redefine A, B, C, D **Channel 1, Channel 2, Channel 3 & Channel 4**
Use Math ? : **Yes**
Math Type : **Average**
Avg. Type : **Summed**
For : **10 sweeps**

- Set the output of the LeCroy LW420 or equivalent audio frequency signal generator to **1 kHz.**
- Connect the output of the generator to Channel 1 through a 50 Ohm coaxial cable and adjust the sine wave output amplitude to get **8 divisions peak to peak .**
- Select Cursors/Measure : **Cursors, Time, Absolute**
- Use the "cursor position" knob, to move the **Time marker** at 0.0 µs


3-Mar-97
9:14:05

A:Average(1)
.1 ms
100mV
-7.2mV
10 swps

B:Average(2)
.1 ms
100mV
-5.3mV
10 swps

C:Average(3)
.1 ms
100mV
-3.1mV
10 swps

D:Average(4)
.1 ms
100mV
-5.0mV
10 swps

.1 ms

1 .1 V 50Ω
2 .1 V 50Ω
3 .1 V 50Ω
4 .1 V 50Ω

Time -0.0 µs

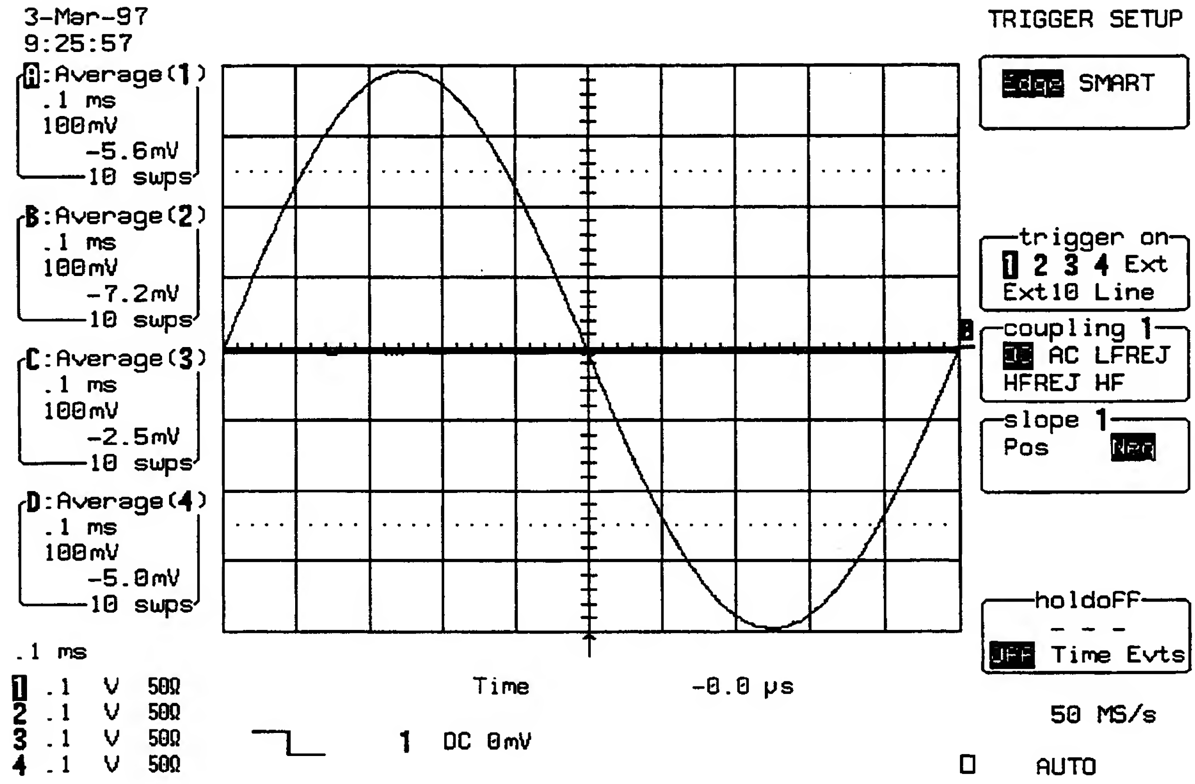
1 DC 0mV

50 MS/s

☐ AUTO

- Press **Clear Sweeps,**
- Acquire 10 sweeps and record in Table 18 the **level** readout displayed below 100 mV in the icon **1,** at top left.
- Compare the test results to the corresponding limit in the test record.
- Set Trigger Slope 1 : **Neg**

- Acquire 10 sweeps and record in Table 18 the **level** readout displayed below 100 mV in the icon **1**, at top left.



b. **HFREJ Coupling**

- Set Coupling : **HFREJ**
- Acquire 10 sweeps and record in Table 19 the **level** readout displayed below 100 mV in the icon **1**, at top left.
- Set Trigger Slope 1 : **Pos**

BMR 31MAR04

- Acquire 10 sweeps and record in Table 19 the **level** readout displayed below 100 mV in the icon **1**, at top left.
- Repeat steps 5.10.2.a. and 5.10.2.b. for all input channels, substituting channel controls (DC, HFREJ, Pos, Neg) and input connector.
  Recall **574p044.PNL** for Channel 2, **574p045.PNL** for Channel 3, **574p046.PNL** for Channel 4, or select **Trigger on** the Channel under test.
  The **Trigger level** is displayed in either the icon **2**, **3** or **4**
- Record the measurements in Table 18 & 19 and compare the test results to the corresponding limits in the test record.

5.10.3 Channel Trigger at +3 Divisions Threshold

a. DC Coupling

- Recall **574p047.PNL** or configure the DSO as shown in 5.10.2.a and for each Channel make the following change :

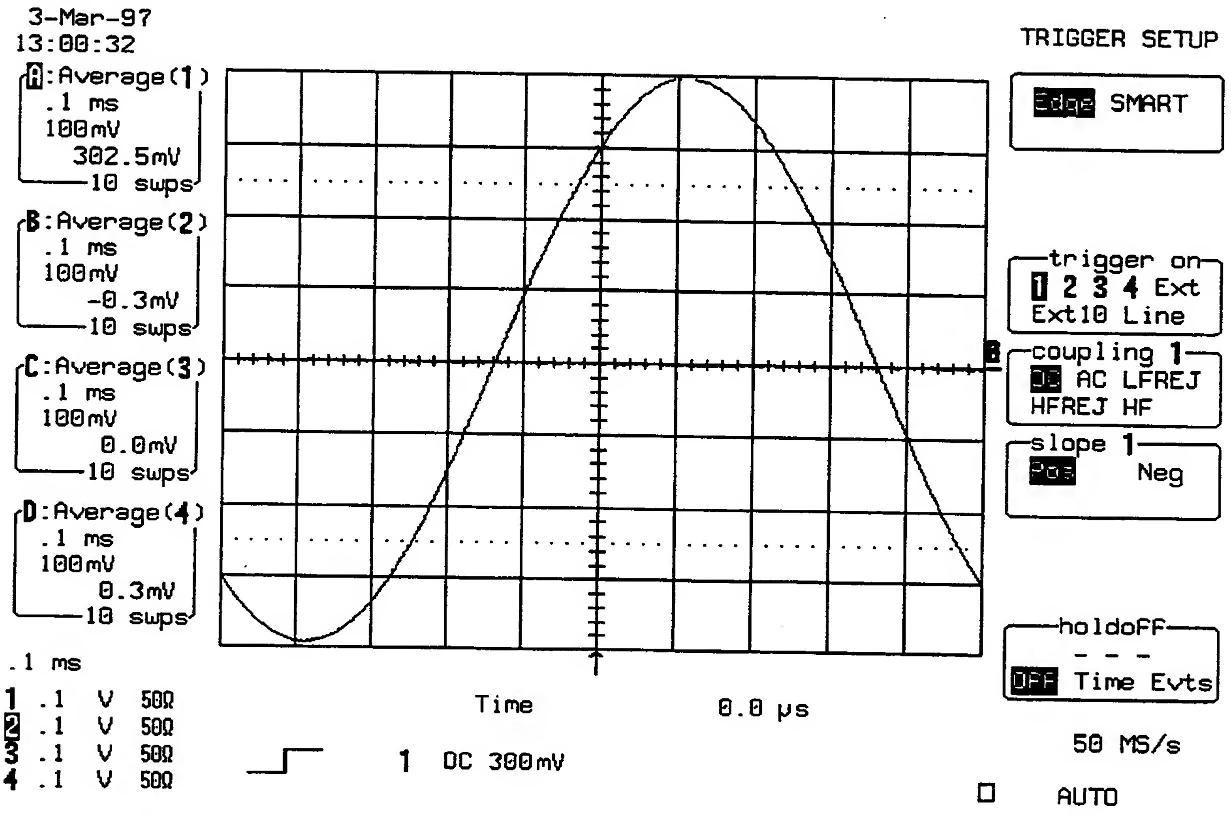
  Set Trigger level : **DC +300 mV**

- Connect the output of the generator to Channel 1 through a 50 Ohm coaxial cable.

- Press **Clear Sweeps**,

- Acquire 10 sweeps and record in Table 18 the **level** readout displayed below 100 mV in the icon **1**, at top left.

- Compare the test results to the corresponding limit in the test record.



3-Mar-97
13:00:32

A:Average(1)
.1 ms
100mV
302.5mV
10 swps

B:Average(2)
.1 ms
100mV
-0.3mV
10 swps

C:Average(3)
.1 ms
100mV
0.0mV
10 swps

D:Average(4)
.1 ms
100mV
0.3mV
10 swps

.1 ms
1 .1 V 50Ω
2 .1 V 50Ω
3 .1 V 50Ω
4 .1 V 50Ω

Time 0.0 μs

1 DC 300mV

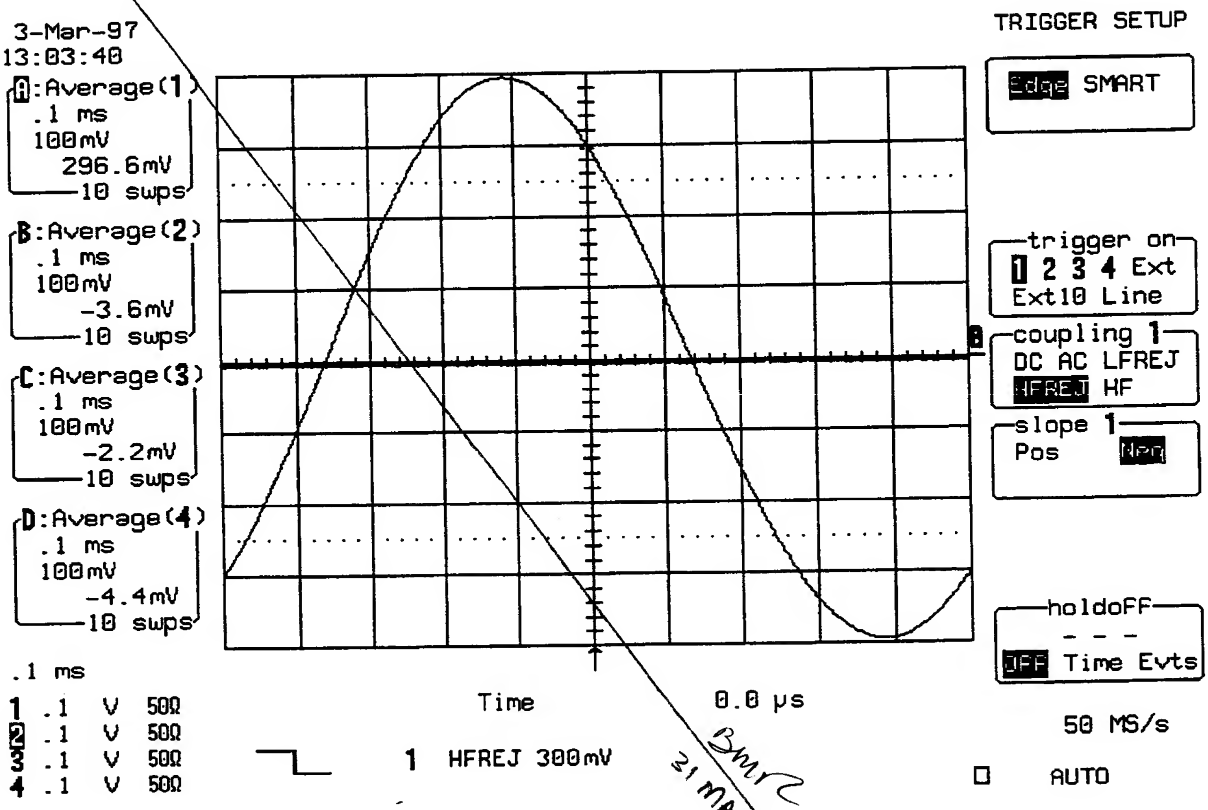
TRIGGER SETUP
Edge SMART
trigger on
1 2 3 4 Ext
Ext10 Line
coupling 1
DC AC LFREJ
HFREJ HF
slope 1
Pos Neg
holdoff
- - -
OFF Time Evts
50 MS/s
☐ AUTO

- Set Trigger Slope 1 : **Neg**

- Acquire 10 sweeps and record in Table 18 the **level** readout displayed below 100 mV in the icon **1**, at top left.

b. HFREJ Coupling

- Set Coupling : **HFREJ**
- Acquire 10 sweeps and record in Table 19 the **level** readout displayed below 100 mV in the icon **1,** at top left.



3-Mar-97
13:03:40

A:Average(1)
.1 ms
100mV
296.6mV
10 swps

B:Average(2)
.1 ms
100mV
-3.6mV
10 swps

C:Average(3)
.1 ms
100mV
-2.2mV
10 swps

D:Average(4)
.1 ms
100mV
-4.4mV
10 swps

.1 ms
1 .1 V 50Ω
2 .1 V 50Ω
3 .1 V 50Ω
4 .1 V 50Ω

Time 0.0 µs

1 HFREJ 300mV

TRIGGER SETUP
Edge SMART
trigger on: 1 2 3 4 Ext Ext10 Line
coupling 1: DC AC LFREJ HFREJ HF
slope 1: Pos Neg
holdoff: OFF Time Evts
50 MS/s
☐ AUTO

BMR
31 MAR04

- Set Trigger Slope 1 : **Pos**
- Acquire 10 sweeps and record in Table 19 the **level** readout displayed below 100 mV in the icon **1,** at top left.

- Repeat steps 5.10.3.a. and 5.10.3.b. for all input channels, substituting channel controls (DC, HFREJ, Pos, Neg) and input connector.
  Recall **574p048.PNL** for Channel 2, **574p049.PNL** for Channel 3, **574p050.PNL** for Channel 4, or select **Trigger on** the Channel under test.
  The **Trigger level** is displayed in either the icon **2**, **3** or **4**
- Record the measurements in Table 18 & 19 and compare the test results to the corresponding limits in the test record.

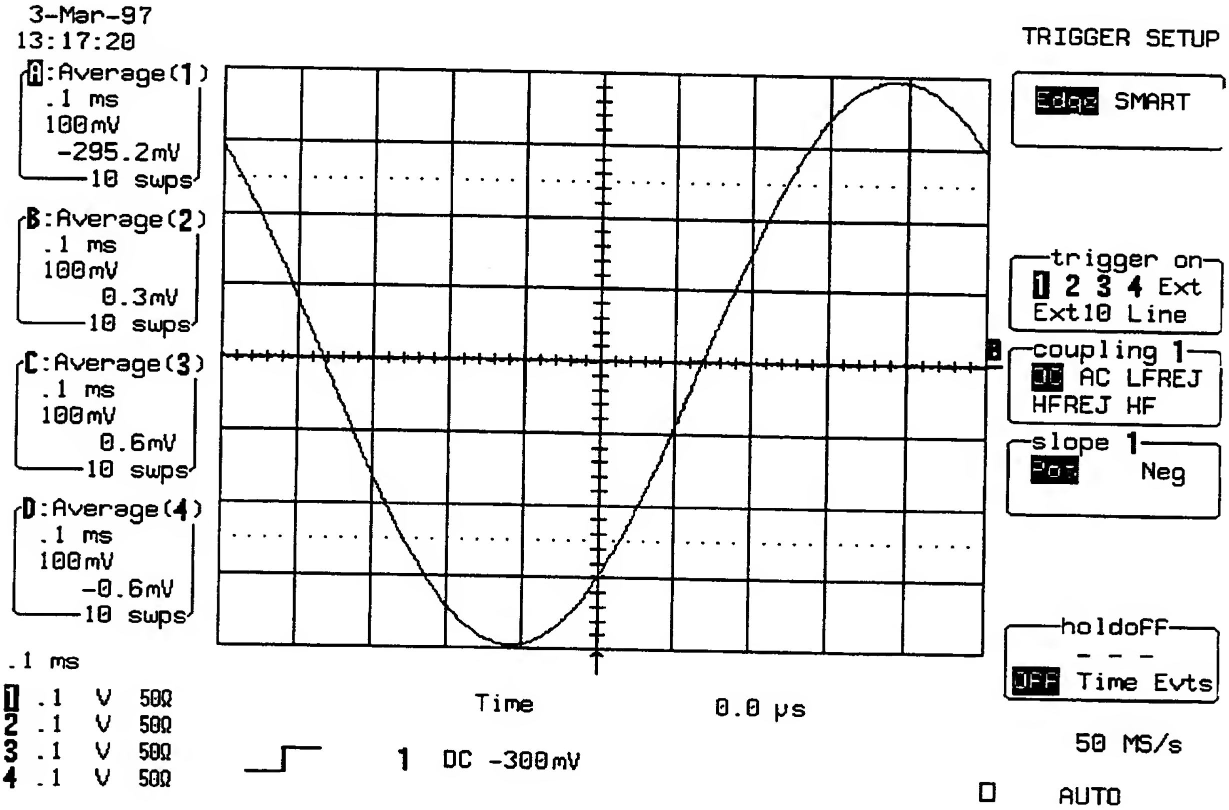
5.10.4 Channel Trigger at –3 Divisions Threshold

a. DC Coupling

- Recall **574p051.PNL** or configure the DSO as shown in 5.10.2.a and for each channel make the following change :

  Set Trigger level : **DC –300 mV**

- Connect the output of the generator to Channel 1 through a 50 Ohm coaxial cable.
- Press **Clear Sweeps**,
- Acquire 10 sweeps and record in Table 18 the **level** readout displayed below 100 mV in the icon **1**, at top left.
- Compare the test results to the corresponding limit in the test record.



3-Mar-97
13:17:20

A:Average(1)
.1 ms
100mV
-295.2mV
10 swps

B:Average(2)
.1 ms
100mV
0.3mV
10 swps

C:Average(3)
.1 ms
100mV
0.6mV
10 swps

D:Average(4)
.1 ms
100mV
-0.6mV
10 swps

.1 ms
1 .1 V 50Ω
2 .1 V 50Ω
3 .1 V 50Ω
4 .1 V 50Ω

Time 0.0 µs

1 DC -300mV

TRIGGER SETUP
Edge SMART

trigger on
1 2 3 4 Ext
Ext10 Line

coupling 1
DC AC LFREJ
HFREJ HF

slope 1
Pos Neg

holdoff
- - -
OFF Time Evts

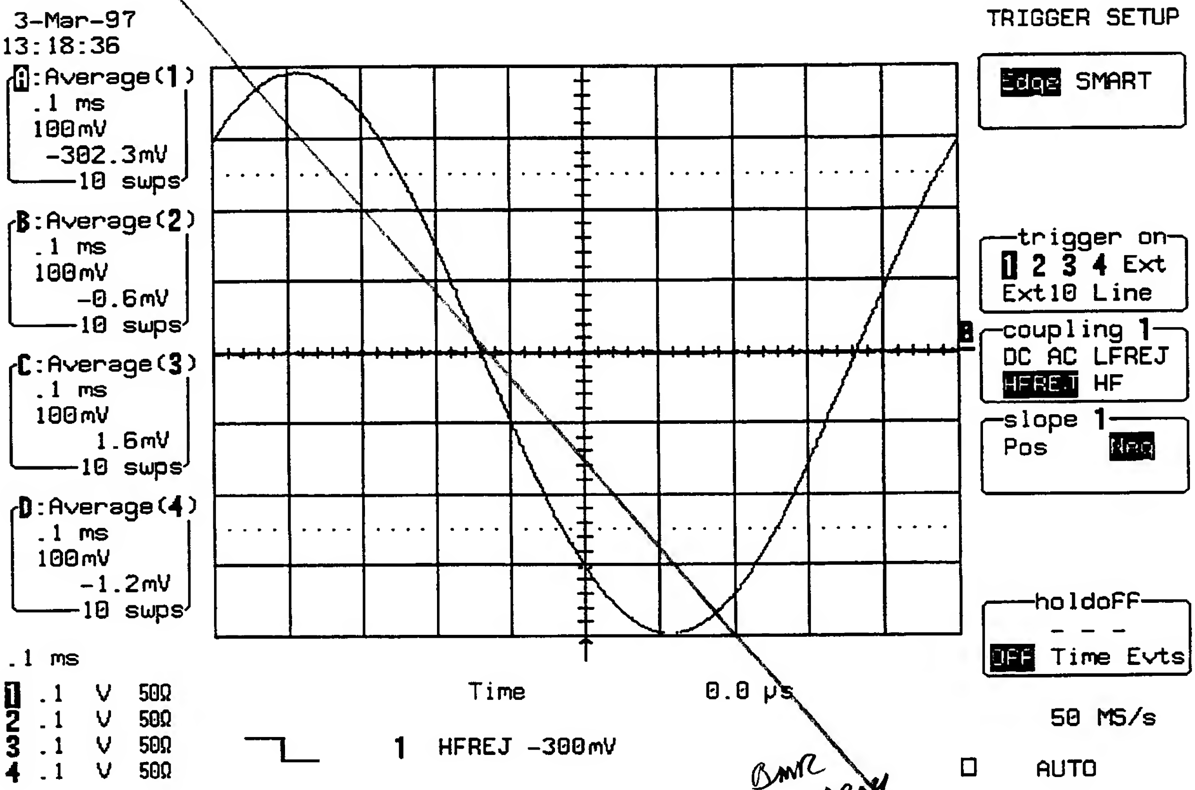
50 MS/s

☐ AUTO

- Set Trigger Slope 1 : **Neg**
- Acquire 10 sweeps and record in Table 18 the **level** readout displayed below 100 mV in the icon **1**, at top left.

~~b. HFREJ Coupling~~

- ~~Set Coupling : **HFREJ**~~
- ~~Acquire 10 sweeps and record in Table 19 the **level** readout displayed below 100 mV in the icon **1**, at top left.~~



3-Mar-97
13:18:36

A:Average(1)
.1 ms
100mV
-302.3mV
10 swps

B:Average(2)
.1 ms
100mV
-0.6mV
10 swps

C:Average(3)
.1 ms
100mV
1.6mV
10 swps

D:Average(4)
.1 ms
100mV
-1.2mV
10 swps

.1 ms
1 .1 V 50Ω
2 .1 V 50Ω
3 .1 V 50Ω
4 .1 V 50Ω

Time 0.0 µs
1 HFREJ -300mV

TRIGGER SETUP
Edge SMART
trigger on: 1 2 3 4 Ext Ext10 Line
coupling 1: DC AC LFREJ HFREJ HF
slope 1: Pos Neg
holdoff: - - - OFF Time Evts
50 MS/s
☐ AUTO

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- ~~Set Trigger Slope 1 : **Pos**~~
- ~~Acquire 10 sweeps and record in Table 19 the **level** readout displayed below 100 mV in the icon **1**, at top left.~~

- Repeat steps 5.10.4.a. and 5.10.4.b. for all input channels, substituting channel controls (DC, HFREJ, Pos, Neg) and input connector.
  Recall **574p052.PNL** for Channel 2, **574p053.PNL** for Channel 3, **574p054.PNL** for Channel 4, or select **Trigger on** the Channel under test.
  The **Trigger level** is displayed in either the icon **2, 3** or **4**
- Record the measurements in Table 18 & 19 and compare the test results to the corresponding limits in the test record.

5.10.5 External Trigger at 0 Division Threshold

a. DC Coupling

- Recall **574p055.PNL** or configure the DSO :

Panel Setups : **Recall FROM DEFAULT SETUP**
Channel Trace ON **Channel 2**
Input Coupling : **DC 50Ω**
Input gain : **100 mV/div.**
Input offset : **0 mV**

Trigger setup : **Edge**
Trigger on : **Ext**
Slope Ext : **Pos**
Coupling Ext : **DC**
Set Trigger level : **0.0 mV**
External : **DC 1MΩ**
Mode : **Auto**
Pre-Trigger Delay : **50 %**
Timebase : **0.1 msec/div.**
Record up to : **50 k samples**

Channel Trace OFF **Channel 2**
Zoom+Math Trace ON **B**
Select Math Setup
For Math : **Use at most 5000 points**
Redefine B : **Channel 2**
Use Math ? : **Yes**
Math Type : **Average**
Avg. Type : **Summed**
For : **10 sweeps**

- Connect the test equipment as shown in Figure 5-12.
- Set the output of the LeCroy LW420 or equivalent audio frequency signal generator to **1 kHz.**
- Adjust the sine wave output amplitude to get **8 divisions peak to peak .**
- Select Cursors/Measure : **Cursors, Time, Absolute**
- Use the "cursor position" knob, to move the **Time marker** at 0.0 µs

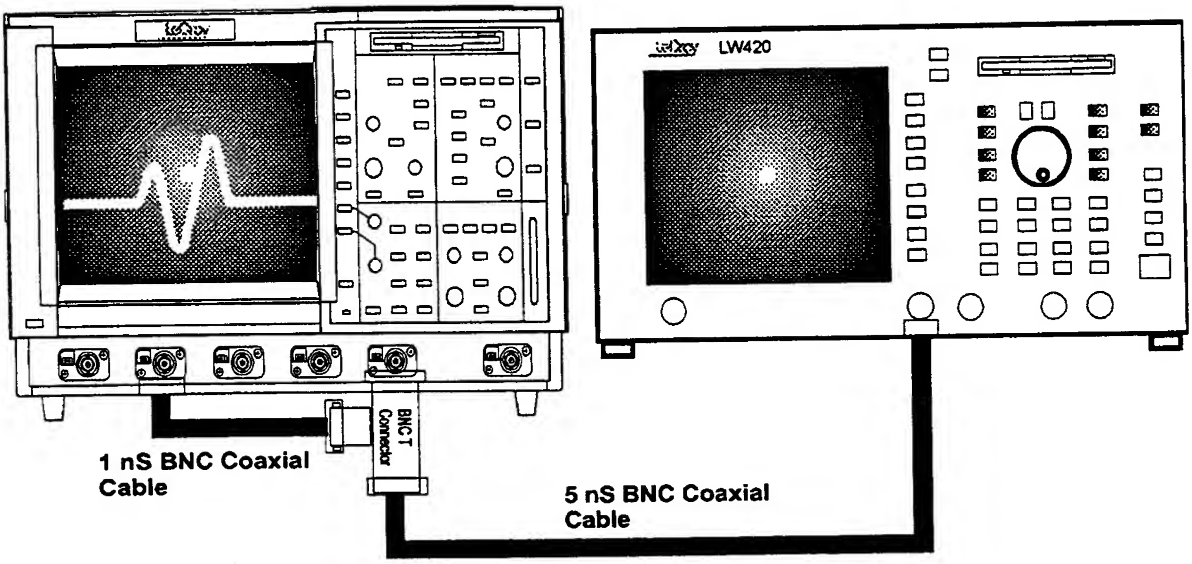
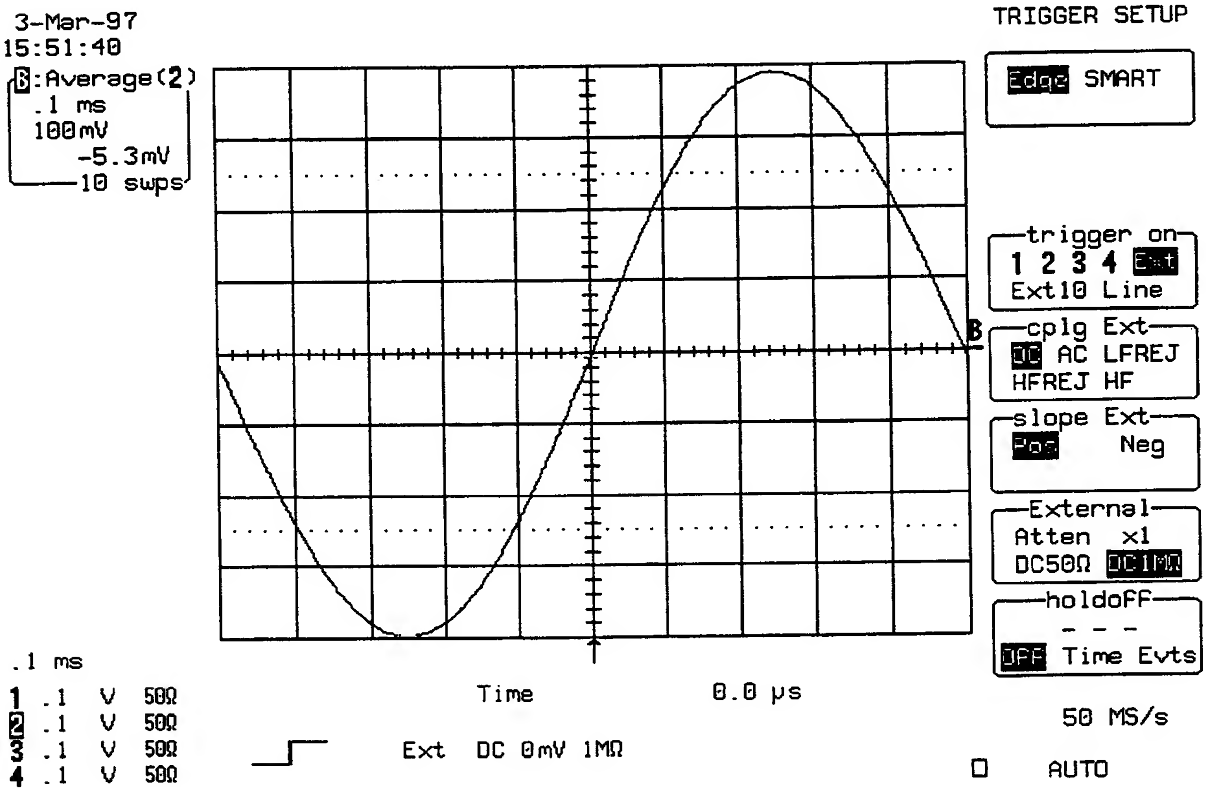


Figure 5-12 : External Trigger Equipment Setup

- Press **Clear Sweeps**,
- Acquire 10 sweeps and record in Table 20 the **level** readout displayed below 100 mV in the icon **2**, at top left.

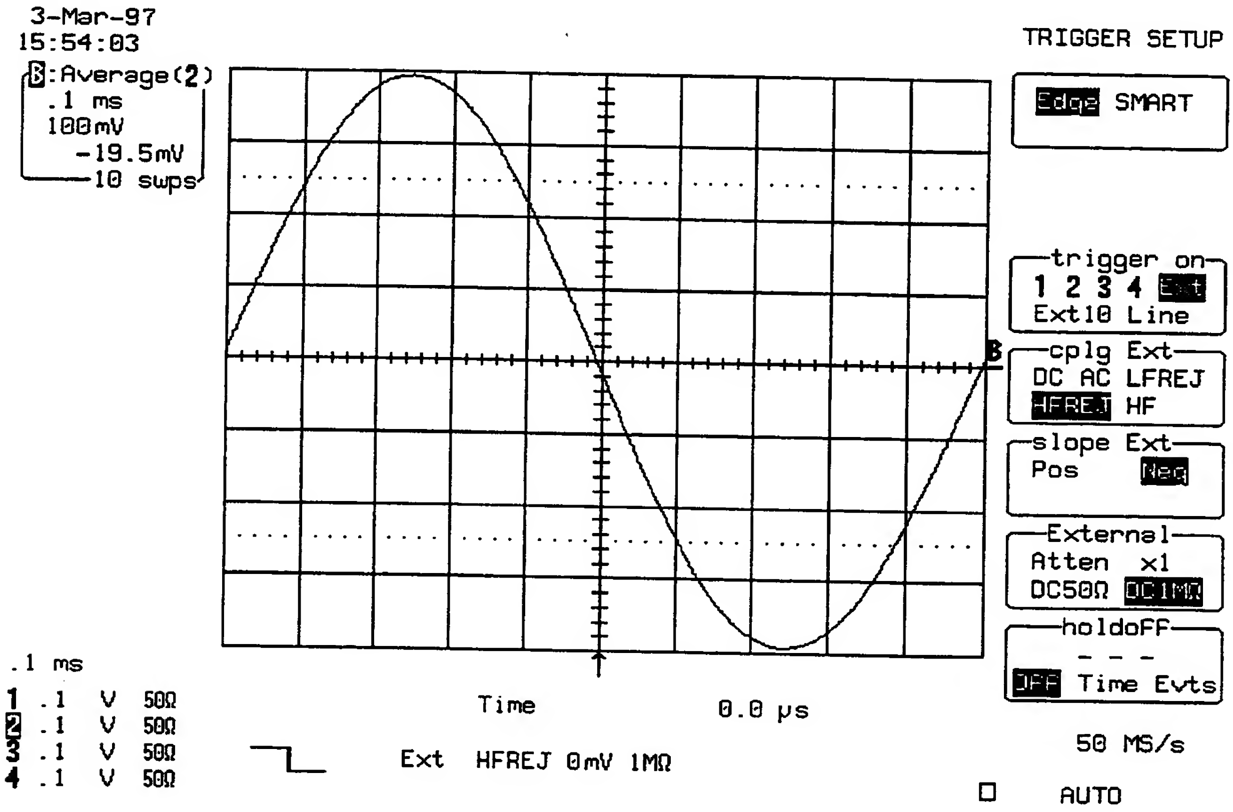


```
3-Mar-97
15:51:40
B:Average(2)
 .1 ms
100mV
    -5.3mV
  10 swps

.1 ms
1 .1  V  50Ω
2 .1  V  50Ω
3 .1  V  50Ω
4 .1  V  50Ω

Time        0.0 µs
Ext   DC 0mV 1MΩ

TRIGGER SETUP
Edge SMART
trigger on
1 2 3 4 Ext
Ext10 Line
cplg Ext
DC AC LFREJ
HFREJ HF
slope Ext
Pos     Neg
External
Atten  x1
DC50Ω DC1MΩ
holdoff
 - - -
OFF Time Evts

50 MS/s
☐   AUTO
```

- Set Trigger Slope Ext : **Neg**
- Acquire 10 sweeps and record in Table 20 the **level** readout displayed below 100 mV in the icon **2,** at top left.
- Compare the test results to the corresponding limit in the test record.

b. HFREJ Coupling

- Set Coupling Ext : **HFREJ**
- Acquire 10 sweeps and record in Table 20 the **level** readout displayed below 100 mV in the icon **2,** at top left.



```
3-Mar-97
15:54:03
B:Average(2)
 .1 ms
 100mV
   -19.5mV
   10 swps

.1 ms
1 .1  V  50Ω
2 .1  V  50Ω
3 .1  V  50Ω
4 .1  V  50Ω

Time          0.0 µs
Ext  HFREJ 0mV 1MΩ

50 MS/s
AUTO
```

- Set Trigger Slope Ext : **Pos**
- Acquire 10 sweeps and record in Table 20 the **level** readout displayed below 100 mV in the icon **2,** at top left.
- Compare the test results to the corresponding limit in the test record.

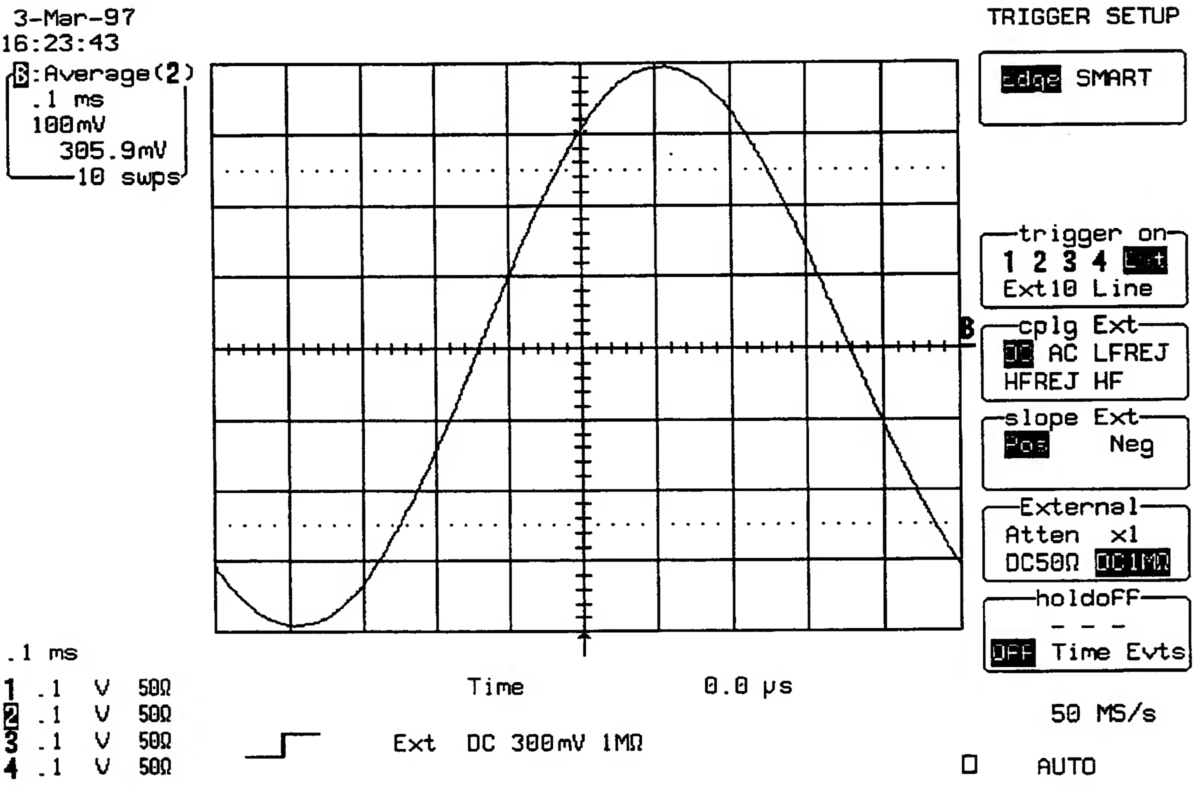
5.10.6 External Trigger at +3 Divisions Threshold

a. DC Coupling

- Recall **574p056.PNL** or configure the DSO as shown in 5.10.5.a and make the following change :

  Set Ext Trigger level : **DC +300 mV**

- Connect the test equipment as shown in Figure 5-12.
- Press **Clear Sweeps,**
- Acquire 10 sweeps and record in Table 20 the **level** readout displayed below 100 mV in the icon **2,** at top left.
- Compare the test results to the corresponding limit in the test record.



3-Mar-97
16:23:43

B:Average(2)
.1 ms
100mV
305.9mV
10 swps

.1 ms

1 .1 V 50Ω
2 .1 V 50Ω
3 .1 V 50Ω
4 .1 V 50Ω

Time 0.0 µs

Ext DC 300mV 1MΩ

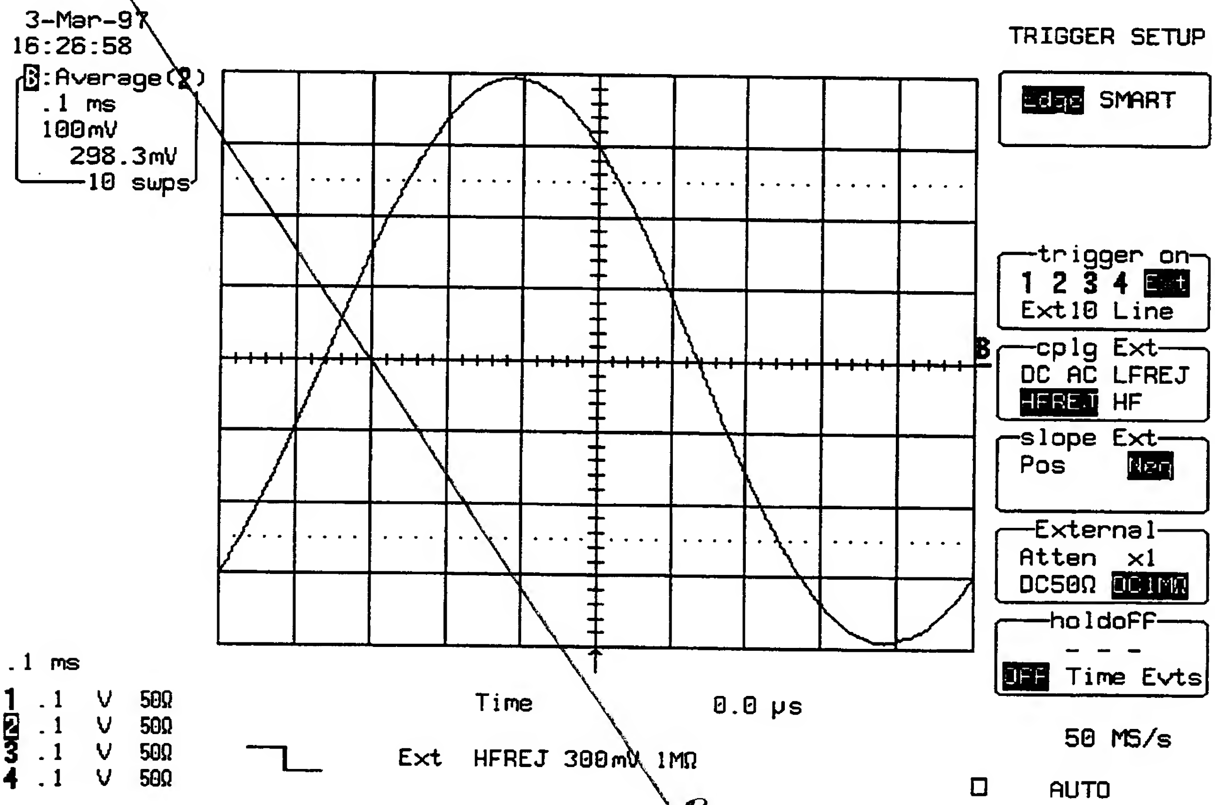
50 MS/s

AUTO

- Set Trigger Slope Ext : **Neg**
- Acquire 10 sweeps and record in Table 20 the **level** readout displayed below 100 mV in the icon **2,** at top left.

b. HFREJ Coupling

- Set Ext Coupling : **HFREJ**
- Acquire 10 sweeps and record in Table 20 the **level** readout displayed below 100 mV in the icon **2**, at top left.



3-Mar-97
16:26:58
B:Average(2)
.1 ms
100mV
298.3mV
10 swps

.1 ms
1 .1 V 50Ω
2 .1 V 50Ω
3 .1 V 50Ω
4 .1 V 50Ω

Time 0.0 μs
Ext HFREJ 300mV 1MΩ

TRIGGER SETUP
Edge SMART
trigger on: 1 2 3 4 Ext Ext10 Line
cplg Ext: DC AC LFREJ HFREJ HF
slope Ext: Pos Neg
External: Atten x1 DC50Ω DC1MΩ
holdoff: - - - OFF Time Evts
50 MS/s
☐ AUTO

BMR
31MAR04

- Set Trigger Slope Ext : **Pos**
- Acquire 10 sweeps and record in Table 20 the **level** readout displayed below 100 mV in the icon **2**, at top left.

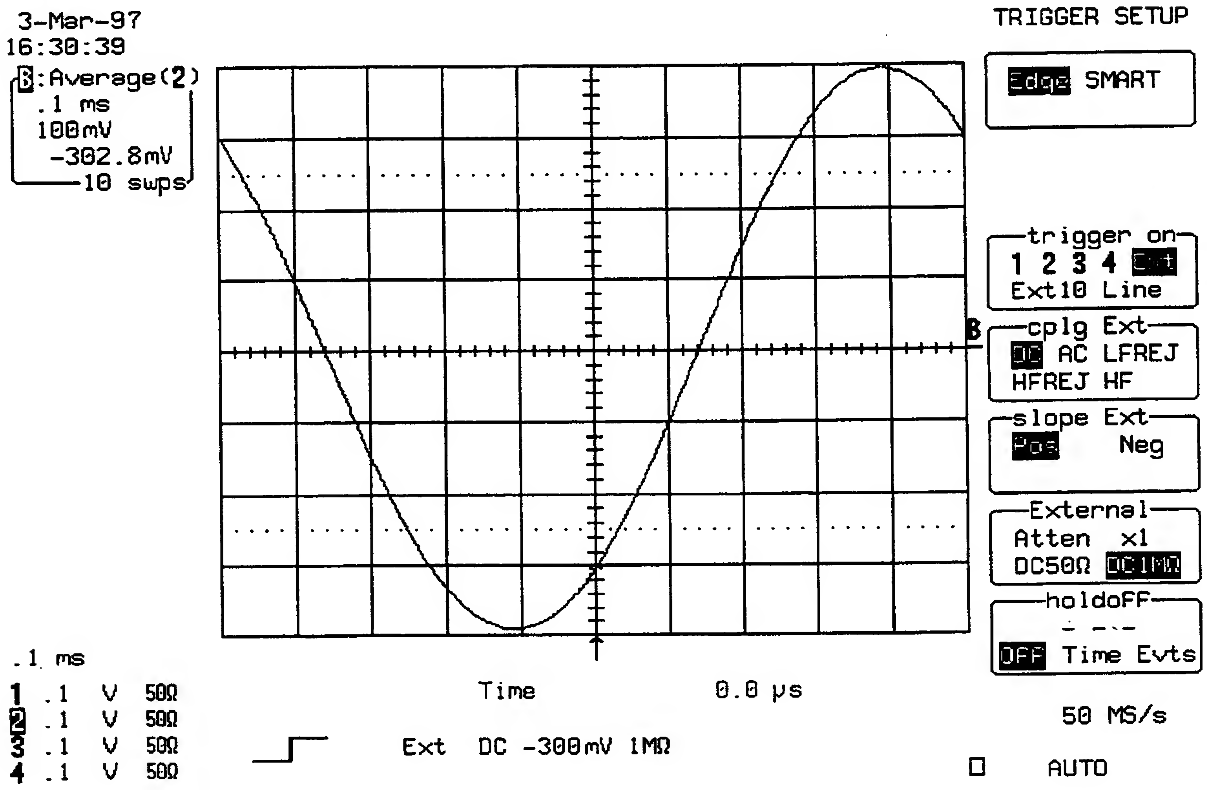
5.10.7 External Trigger at –3 Divisions Threshold

a. DC Coupling

- Recall **574p057.PNL** or configure the DSO as shown in 5.10.5.a and make the following change :

  Set Ext Trigger level : **DC –300 mV**

- Connect the test equipment as shown in Figure 5-12.
- Press **Clear Sweeps.**
- Acquire 10 sweeps and record in Table 20 the **level** readout displayed below 100 mV in the icon **2,** at top left.
- Compare the test results to the corresponding limit in the test record.



3-Mar-97
16:30:39
B:Average(2)
.1 ms
100mV
-302.8mV
10 swps

TRIGGER SETUP
Edge SMART
trigger on: 1 2 3 4 Ext Ext10 Line
cplg Ext: DC AC LFREJ HFREJ HF
slope Ext: Pos Neg
External: Atten x1 DC50Ω DC1MΩ
holdoff: OFF Time Evts

.1 ms
1 .1 V 50Ω
2 .1 V 50Ω
3 .1 V 50Ω
4 .1 V 50Ω

Time 0.0 μs

Ext DC -300mV 1MΩ

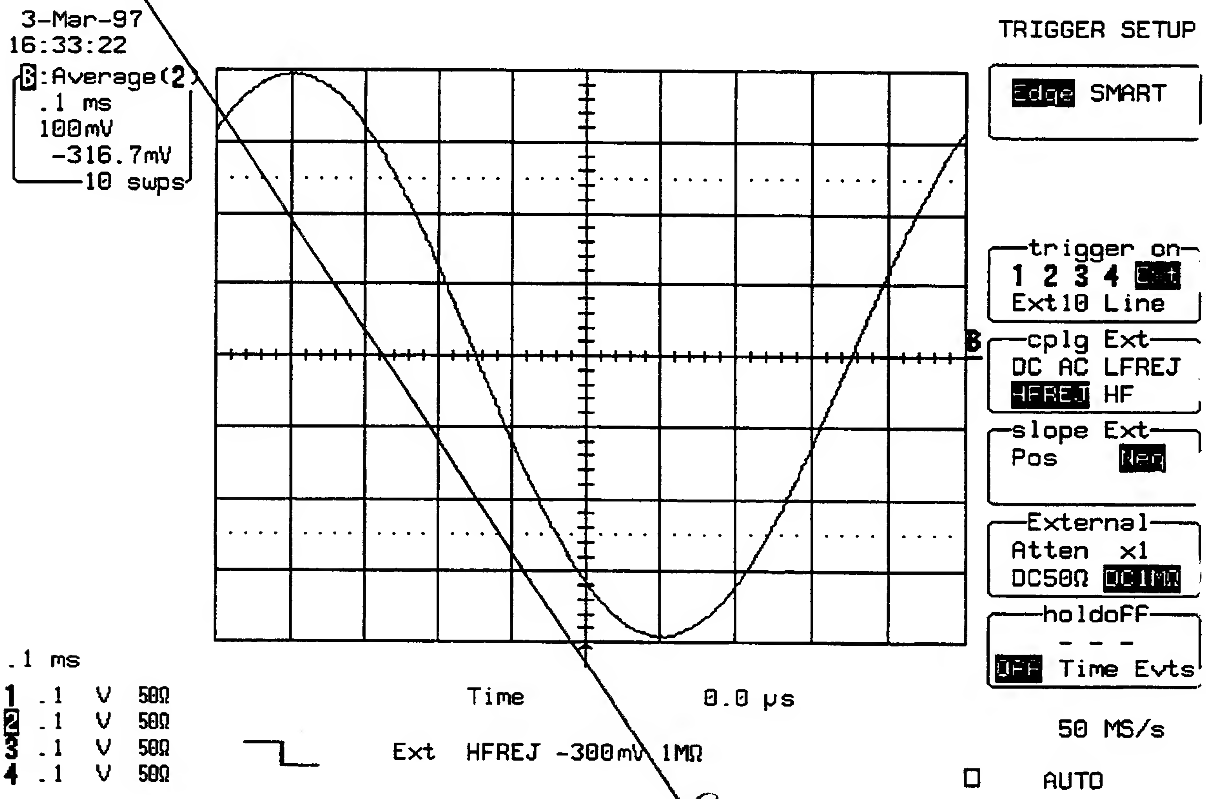
50 MS/s

☐ AUTO

- Set Trigger Slope Ext : **Neg**
- Acquire 10 sweeps and record in Table 20 the **level** readout displayed below 100 mV in the icon **2,** at top left.

b. HFREJ Coupling

- Set Ext Coupling : **HFREJ**
- Acquire 10 sweeps and record in Table 20 the **level** readout displayed below 100 mV in the icon **2,** at top left.
- Compare the test results to the corresponding limit in the test record.



3-Mar-97
16:33:22
B:Average(2)
.1 ms
100mV
-316.7mV
10 swps

TRIGGER SETUP
Edge SMART
trigger on
1 2 3 4 Ext
Ext10 Line
cplg Ext
DC AC LFREJ
HFREJ HF
slope Ext
Pos Neg
External
Atten x1
DC50Ω DC1MΩ
holdoff
- - -
OFF Time Evts

.1 ms
1 .1 V 50Ω
2 .1 V 50Ω
3 .1 V 50Ω
4 .1 V 50Ω

Time 0.0 µs
Ext HFREJ -300mV 1MΩ

50 MS/s
☐ AUTO

BMC
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- Set Trigger Slope Ext : **Pos**
- Acquire 10 sweeps and record in Table 20 the **level** readout displayed below 100 mV in the icon **2,** at top left.
- Compare the test results to the corresponding limit in the test record.

5.10.8 External/10 Trigger at 0 Division Threshold

a. DC Coupling

- Recall **574p058.PNL** or configure the DSO :

Panel Setups : **Recall FROM DEFAULT SETUP**
Channel Trace ON **Channel 2**
Input Coupling : **DC 50Ω**
Input gain : **1V/div**
Input offset : **0 mV**

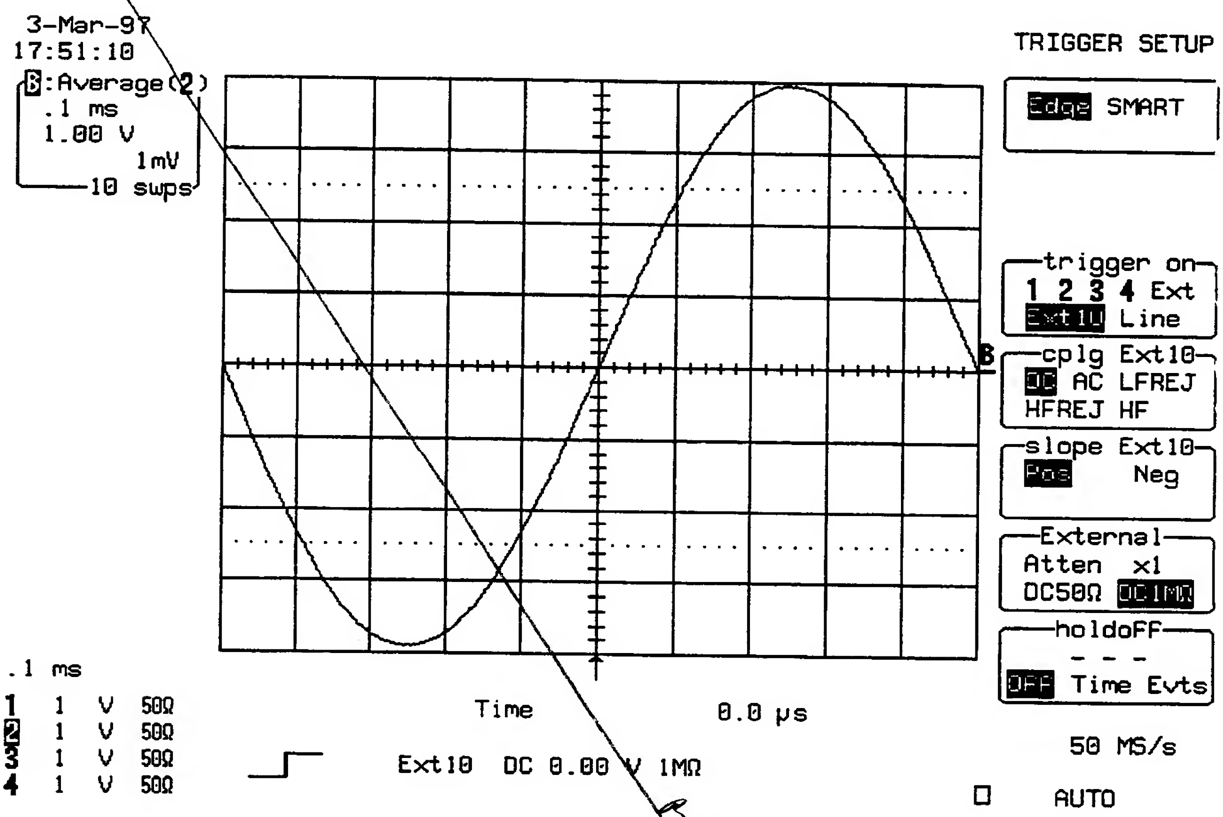
Trigger setup : **Edge**
Trigger on : **Ext/10**
Slope Ext/10 : **Pos**
Mode : **Auto**
Coupling : **DC**
Set Trigger level : **0.0 mV**
External : **DC 1MΩ**
Pre-Trigger Delay : **50 %**
Timebase : **0.1 msec/div.**
Record up to : **50 k samples**

Channel Trace OFF **Channel 2**
Zoom+Math Trace ON **B**
Select Math Setup
For Math : **Use at most 5000 points**
Redefine B : **Channel 2**
Use Math ? : **Yes**
Math Type : **Average**
Avg. Type : **Summed**
For : **10 sweeps**

BmR
31 mar 04

- Connect the test equipment as shown in Figure 5-12.
- Set the output of the LeCroy LW420 or equivalent audio frequency signal generator to **1 kHz.**
- Adjust the sine wave output amplitude to get **8 divisions peak to peak** .
- Select Cursors/Measure : **Cursors, Time, Absolute**
- Use the "cursor position" knob, to move the **Time marker** at 0.0 µs

- Press **Clear Sweeps**,
- Acquire 10 sweeps and record in Table 20 the **level** readout displayed below 100 mV in the icon **2**, at top left.



3-Mar-97
17:51:10
B:Average(2)
.1 ms
1.00 V
1mV
10 swps

TRIGGER SETUP
Edge SMART

trigger on
1 2 3 4 Ext
Ext10 Line

cplg Ext10
DC AC LFREJ
HFREJ HF

slope Ext10
Pos Neg

External
Atten x1
DC50Ω DC1MΩ

holdoff
- - -
OFF Time Evts

.1 ms
1 1 V 50Ω
2 1 V 50Ω
3 1 V 50Ω
4 1 V 50Ω

Time 0.0 µs

Ext10 DC 0.00 V 1MΩ

50 MS/s

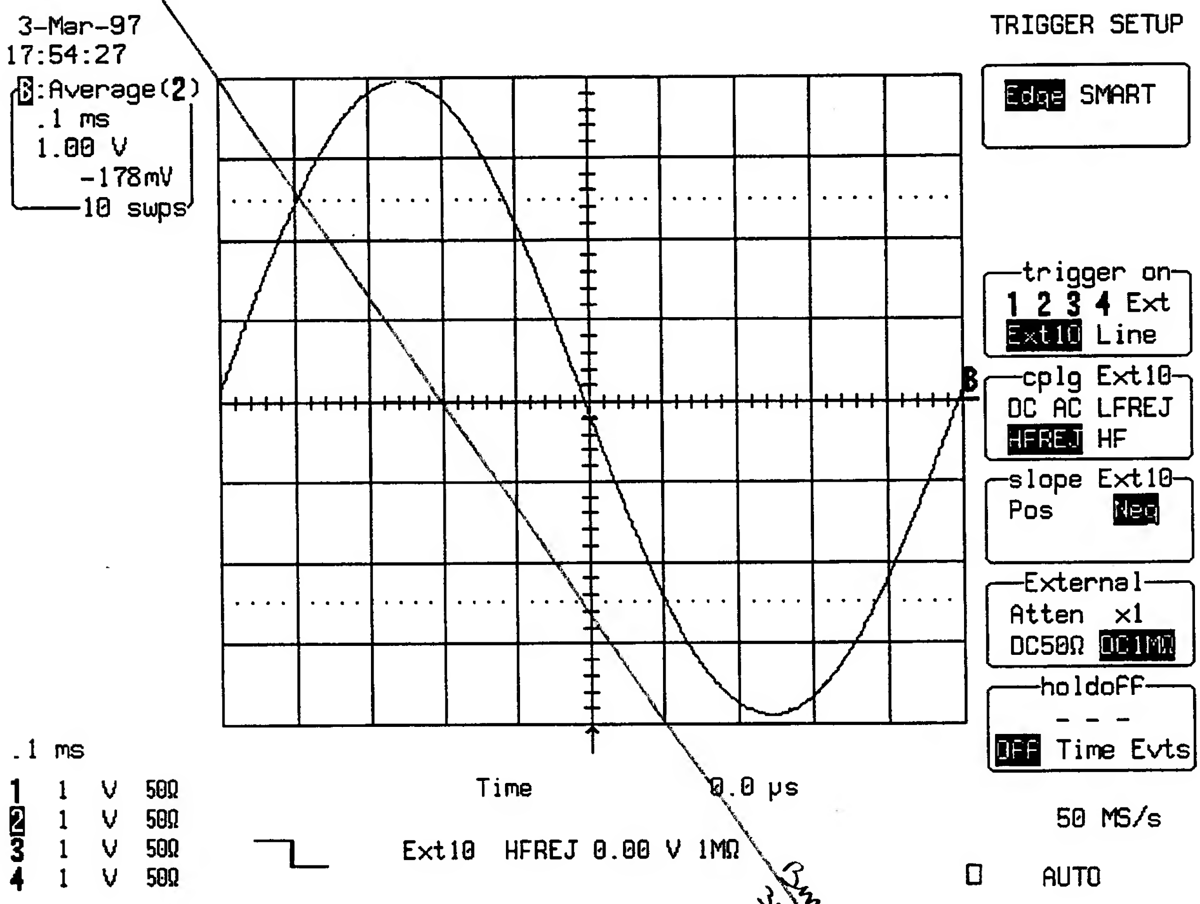
☐ AUTO

Bmr
31 MAR 04

- Set Trigger Slope Ext/10 : **Neg**
- Acquire 10 sweeps and record in Table 20 the **level** readout displayed below 100 mV in the icon **2**, at top left.
- Compare the test results to the corresponding limit in the test record.

b. HFREJ Coupling

- Set Coupling Ext/10 : **HFREJ**
- Acquire 10 sweeps and record in Table 20 the **level** readout displayed below 100 mV in the icon **2,** at top left.



3-Mar-97
17:54:27
B:Average(2)
.1 ms
1.00 V
-178mV
10 swps

.1 ms

1	1	V	50Ω
2	1	V	50Ω
3	1	V	50Ω
4	1	V	50Ω

Time 0.0 µs

Ext10 HFREJ 0.00 V 1MΩ

50 MS/s

☐ AUTO

Bmk
31 MAR 04

- Set Trigger Slope Ext/10 : **Pos**
- Acquire 10 sweeps and record in Table 20 the **level** readout displayed below 100 mV in the icon **2,** at top left.
- Compare the test results to the corresponding limit in the test record.

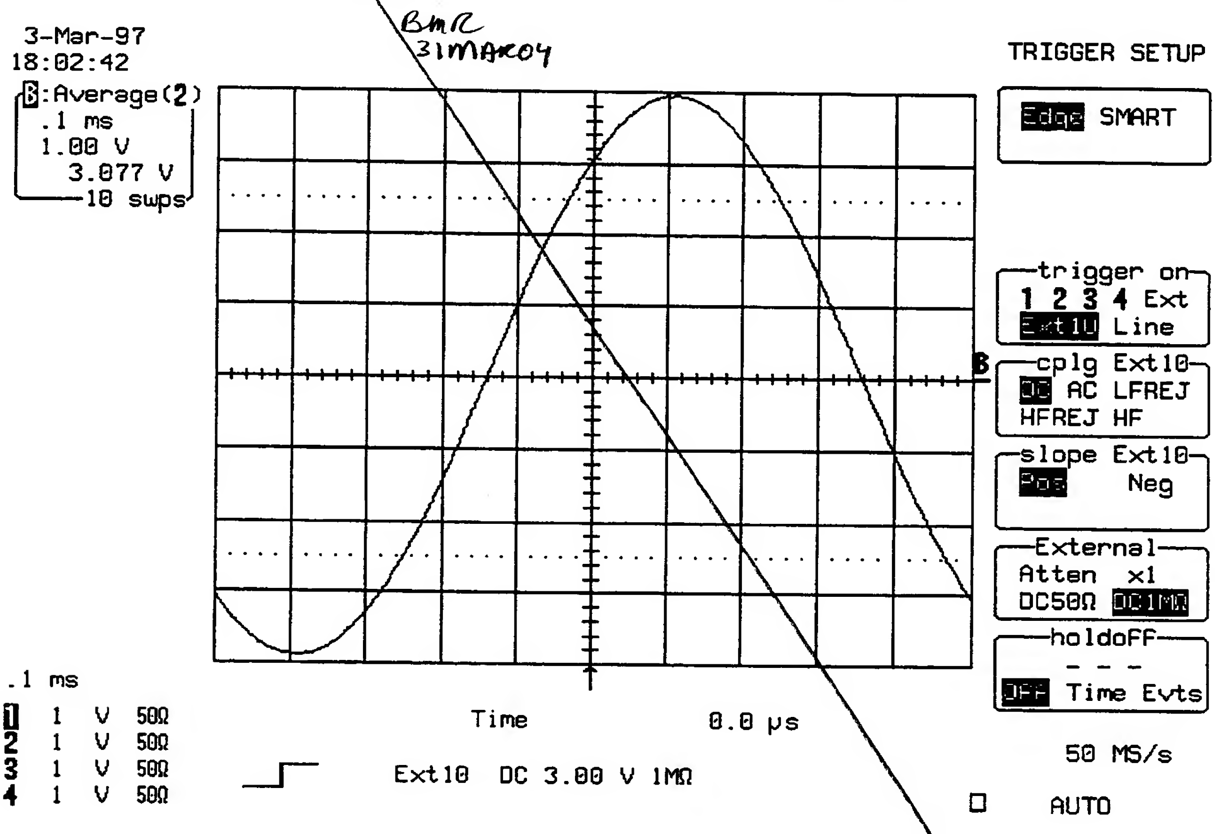
5.10.9 External/10 Trigger at +3 Divisions Threshold

a. DC Coupling

- Recall **574p059.PNL** or configure the DSO as shown in 5.10.8.a and make the following change :

  Set Ext/10 Trigger level : **DC +3 V**

- Connect the test equipment as shown in Figure 5-12.
- Press **Clear Sweeps**,
- Acquire 10 sweeps and record in Table 20 the **level** readout displayed below 100 mV in the icon **2**, at top left.
- Compare the test results to the corresponding limit in the test record.



BmR
31MAR04

3-Mar-97
18:02:42
B:Average(2)
.1 ms
1.00 V
3.077 V
10 swps

TRIGGER SETUP
Edge SMART

trigger on
1 2 3 4 Ext
Ext10 Line

cplg Ext10
DC AC LFREJ
HFREJ HF

slope Ext10
Pos Neg

External
Atten x1
DC50Ω DC1MΩ

holdoff
- - -
OFF Time Evts

.1 ms
1 1 V 50Ω
2 1 V 50Ω
3 1 V 50Ω
4 1 V 50Ω

Time 0.0 µs

Ext10 DC 3.00 V 1MΩ

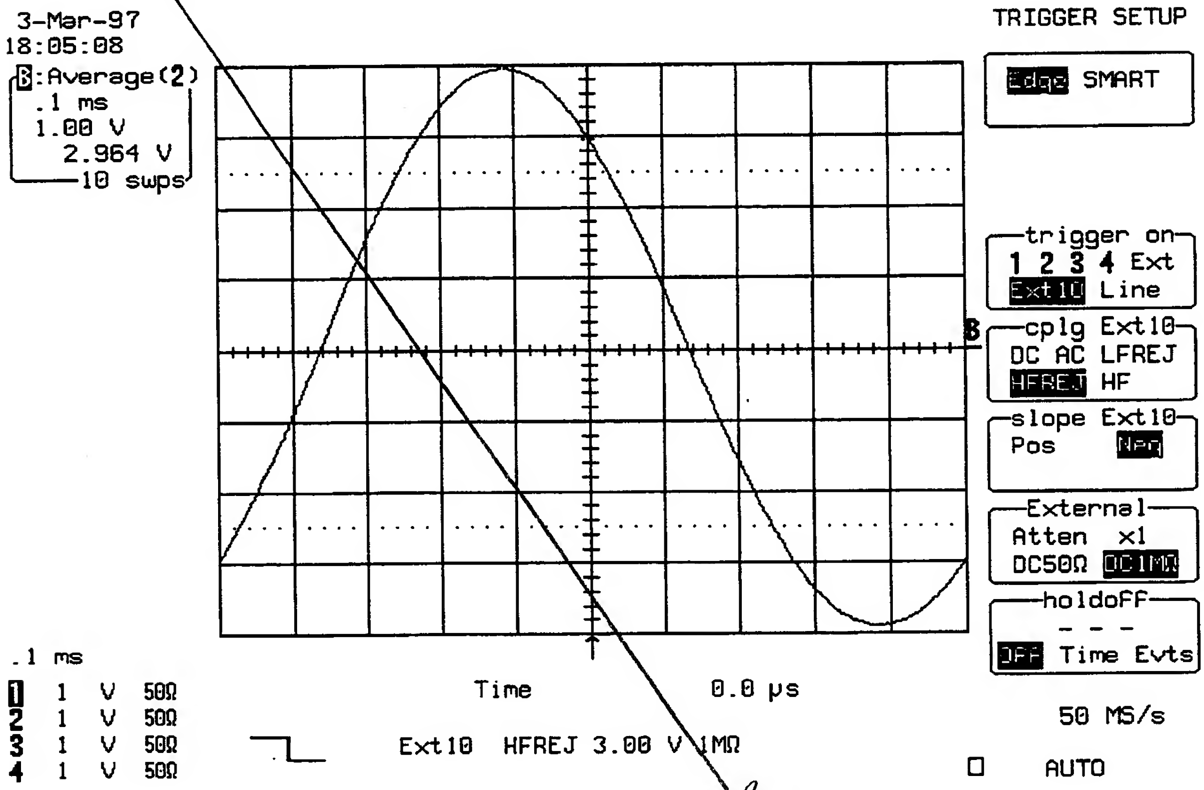
50 MS/s

☐ AUTO

- Set Trigger Slope Ext/10 : **Neg**
- Acquire 10 sweeps and record in Table 20 the **level** readout displayed below 100 mV in the icon **2**, at top left.

b. HFREJ Coupling

- Set Ext/10 Coupling: **HFREJ**
- Acquire 10 sweeps and record in Table 20 the **level** readout displayed below 100 mV in the icon **2,** at top left.



3-Mar-97
18:05:08
B:Average(2)
.1 ms
1.00 V
2.964 V
10 swps

TRIGGER SETUP
Edge SMART
trigger on
1 2 3 4 Ext
Ext10 Line
cplg Ext10
DC AC LFREJ
HFREJ HF
slope Ext10
Pos Neg
External
Atten x1
DC50Ω DC1MΩ
holdoff
- - -
OFF Time Evts

.1 ms
1 1 V 50Ω
2 1 V 50Ω
3 1 V 50Ω
4 1 V 50Ω

Time 0.0 µs
Ext10 HFREJ 3.00 V 1MΩ
50 MS/s
☐ AUTO

BMR
31 MAR 04

- Set Trigger Slope Ext/10 : **Pos**
- Acquire 10 sweeps and record in Table 20 the **level** readout displayed below 100 mV in the icon **2,** at top left.

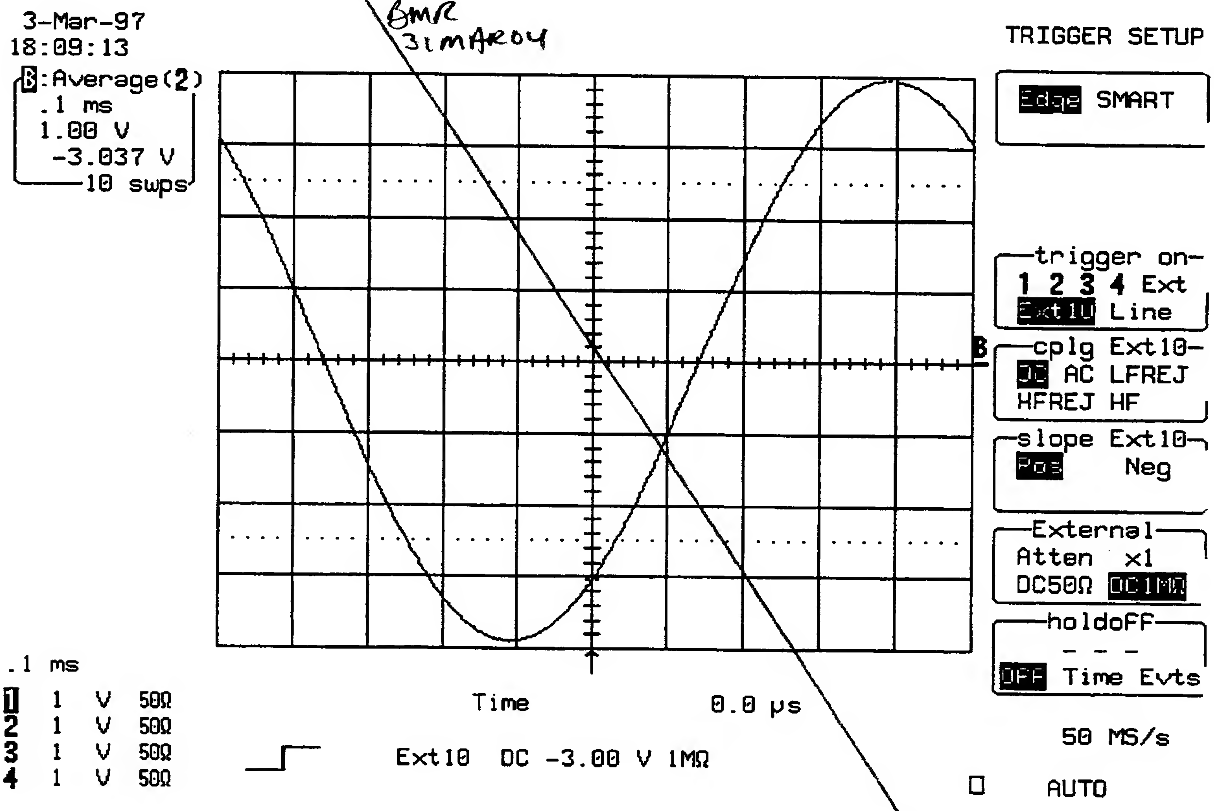
5.10.10 External/10 Trigger at –3 Divisions Threshold

a. DC Coupling

- Recall **574p060.PNL** or configure the DSO as shown in 5.10.5.a and make the following change :

  Set Ext/10 Trigger level : **DC –3 V**

- Connect the test equipment as shown in Figure 5-12.
- Press **Clear Sweeps**.
- Acquire 10 sweeps and record in Table 20 the **level** readout displayed below 100 mV in the icon **2**, at top left.
- Compare the test results to the corresponding limit in the test record.



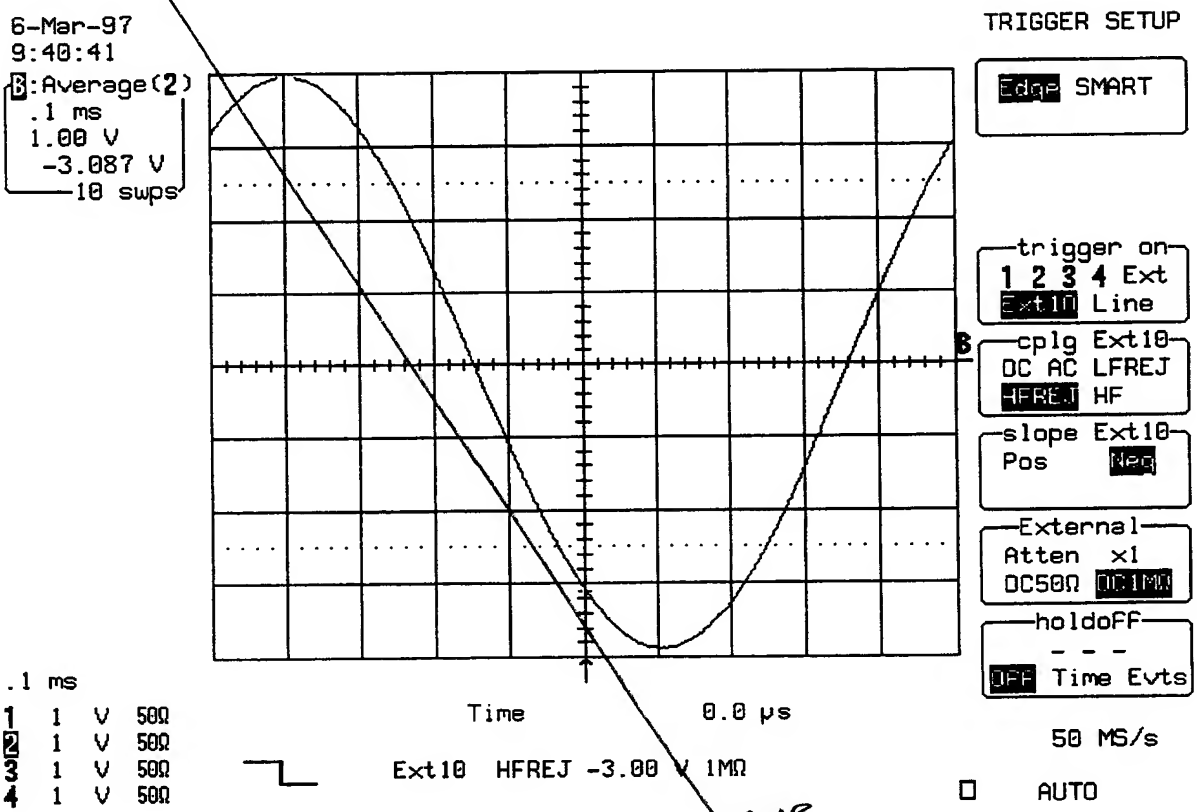
```
3-Mar-97
18:09:13
B:Average(2)
  .1 ms
  1.00 V
  -3.037 V
  10 swps

TRIGGER SETUP
Edge SMART

trigger on
1 2 3 4 Ext
Ext10 Line

cplg Ext10
DC AC LFREJ
HFREJ HF

slope Ext10
Pos    Neg

External
Atten  x1
DC50Ω DC1MΩ

holdoff
  - - -
OFF Time Evts

.1 ms
1  1  V  50Ω
2  1  V  50Ω
3  1  V  50Ω
4  1  V  50Ω

Time          0.0 µs
Ext10  DC -3.00 V 1MΩ

50 MS/s
☐  AUTO
```

BMR
31MAR04

- Set Trigger Slope Ext/10 : **Neg**
- Acquire 10 sweeps and record in Table 20 the **level** readout displayed below 100 mV in the icon **2**, at top left.

b. HFREJ Coupling

- Set Ext/10 Coupling: **HFREJ**
- Acquire 10 sweeps and record in Table 20 the **level** readout displayed below 100 mV in the icon **2,** at top left.
- Compare the test results to the corresponding limit in the test record.



6-Mar-97
9:40:41
2:Average(2)
.1 ms
1.00 V
-3.087 V
10 swps

TRIGGER SETUP
Edge SMART

trigger on
1 2 3 4 Ext
Ext10 Line

cplg Ext10
DC AC LFREJ
HFREJ HF

slope Ext10
Pos **Neg**

External
Atten x1
DC50Ω **DC1MΩ**

holdoff
- - -
OFF Time Evts

.1 ms

1	1	V	50Ω
2	1	V	50Ω
3	1	V	50Ω
4	1	V	50Ω

Time 0.0 µs
Ext10 HFREJ -3.00 V 1MΩ

50 MS/s
☐ AUTO

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- Set Trigger Slope Ext/10 : **Pos**
- Acquire 10 sweeps and record in Table 20 the **level** readout displayed below 100 mV in the icon **2,** at top left.
- Compare the test results to the corresponding limit in the test record.

5.11 Smart Trigger

5.11.1 Trigger on Pulse Width 10 nsec

a. Pulse Width < 10 nsec

- Recall **574p061.PNL** or configure the DSO
  Panel Setups : **Recall FROM DEFAULT SETUP**
  Channels trace ON **Channel 1**
  Input coupling : **DC 50Ω**
  Input gain : **.5 V/div.**
  Input offset : **0 mV**
  Trigger setup : **Smart**
  Setup Smart Trigger **Glitch**
  Trigger on : **1**
  At the end of : **Neg.**
  Width < 10 nsec : **On**
  Width > 10 nsec : **Off**
  Trigger mode : **Norm**
  Timebase : **5 nsec/div.**

- Connect the **RF output** of the HP8648B generator through a 5ns 50 Ohm BNC coaxial cable into Channel 1.

- Set the generator frequency to **100 MHz**. Adjust the generator output amplitude to get **5 divisions peak to peak .**

- Check that the scope Triggers. Record the test result in Table 21.

- Set Width < 10 nsec **Off** and Width > 10 nsec **ON**

- Check that the scope **doesn't trigger** : slow trigger and no flashes in box next to normal. Record the test result in Table 21.

b. Pulse Width > 10 nsec

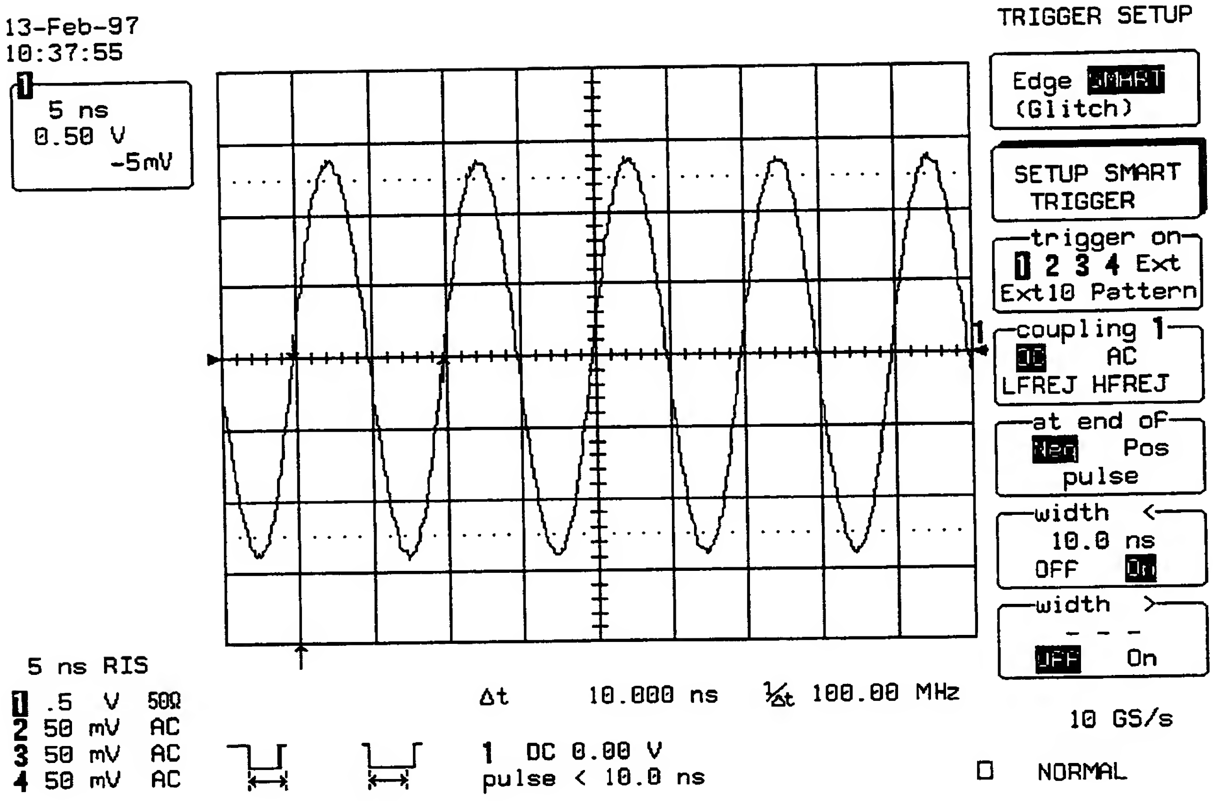
- Set the generator frequency to **40 MHz.**

- Set Width < 10 nsec **Off** and Width > 10 nsec **ON**

- Check that the scope Triggers. Record the test result in Table 21.

- Set Width < 10 nsec On and Width > 10 nsec **Off**

- Check that the scope **doesn't trigger** : slow trigger and no flashes in box . Record the test result in Table 21.



13-Feb-97
10:37:55

1
5 ns
0.50 V
-5mV

5 ns RIS

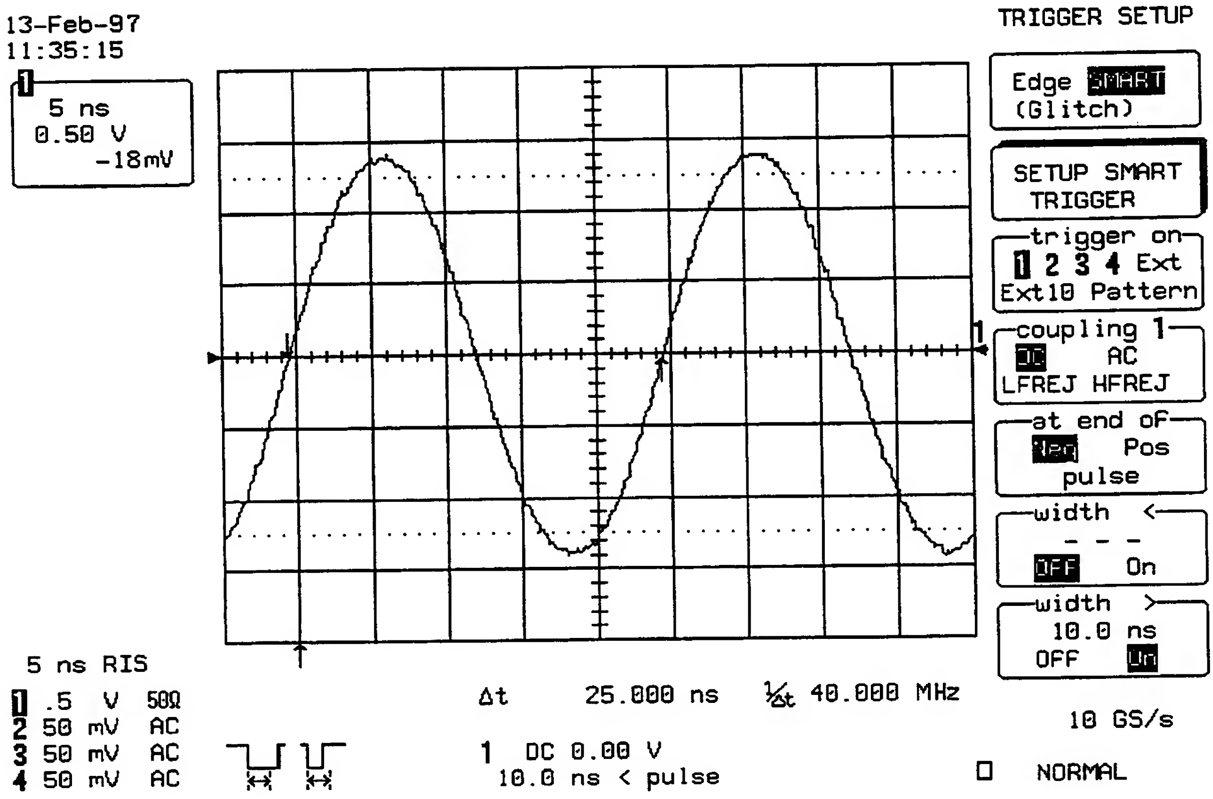
1	.5 V	50Ω
2	50 mV	AC
3	50 mV	AC
4	50 mV	AC

Δt 10.000 ns 1/Δt 100.00 MHz

1 DC 0.00 V
pulse < 10.0 ns

10 GS/s

☐ NORMAL



13-Feb-97
11:35:15

1
5 ns
0.50 V
-18mV

5 ns RIS

1	.5 V	50Ω
2	50 mV	AC
3	50 mV	AC
4	50 mV	AC

Δt 25.000 ns 1/Δt 40.000 MHz

1 DC 0.00 V
10.0 ns < pulse

10 GS/s

☐ NORMAL

5.11.2 Trigger on Pulse Width 100 nsec

a. Pulse Width < 100 nsec

- Recall **574p062.PNL** or configure the DSO as shown in 5.11.1.a and make the following changes :

  Width < 100 nsec : **On**

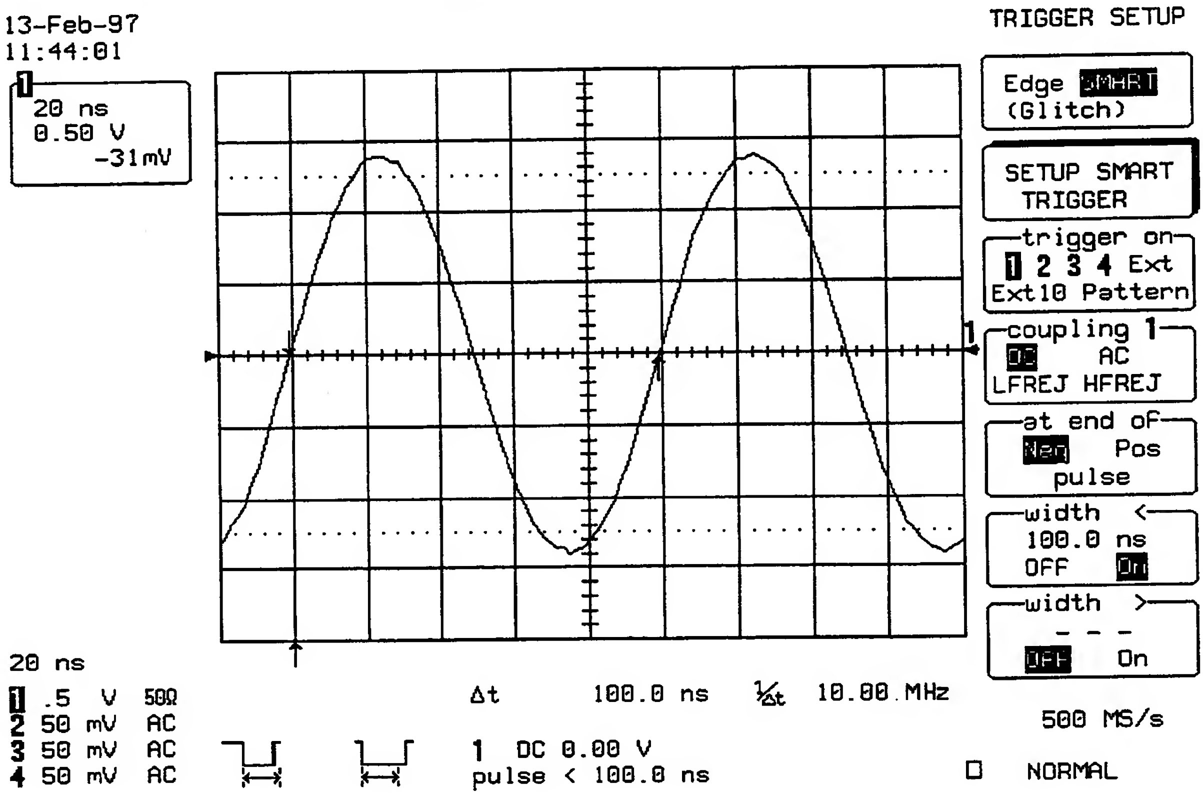
  Width > 100 nsec : **Off**

  Timebase : **20 nsec/div.**

- Set the generator frequency to **10 MHz.**
- Check that the scope Triggers. Record the test result in Table 21.
- Set Width < 100 nsec **Off** and Width > 100 nsec **ON**
- Check that the scope **doesn't trigger :** slow trigger and no flashes in box next to normal. Record the test result in Table 21.

b. Pulse Width > 100 nsec

- Set the generator frequency to **4 MHz.**
- Timebase : **50 nsec/div.**
- Set Width < 100 nsec **Off** and Width > 100 nsec **ON**
- Check that the scope Triggers. Record the test result in Table 21.
- Set Width < 100 nsec **On** and Width > 100 nsec **Off**
- Check that the scope **doesn't trigger :** slow trigger and no flashes in box. Record the test result in Table 21.



13-Feb-97
11:44:01

1
20 ns
0.50 V
-31mV

20 ns

1 .5 V 50Ω
2 50 mV AC
3 50 mV AC
4 50 mV AC

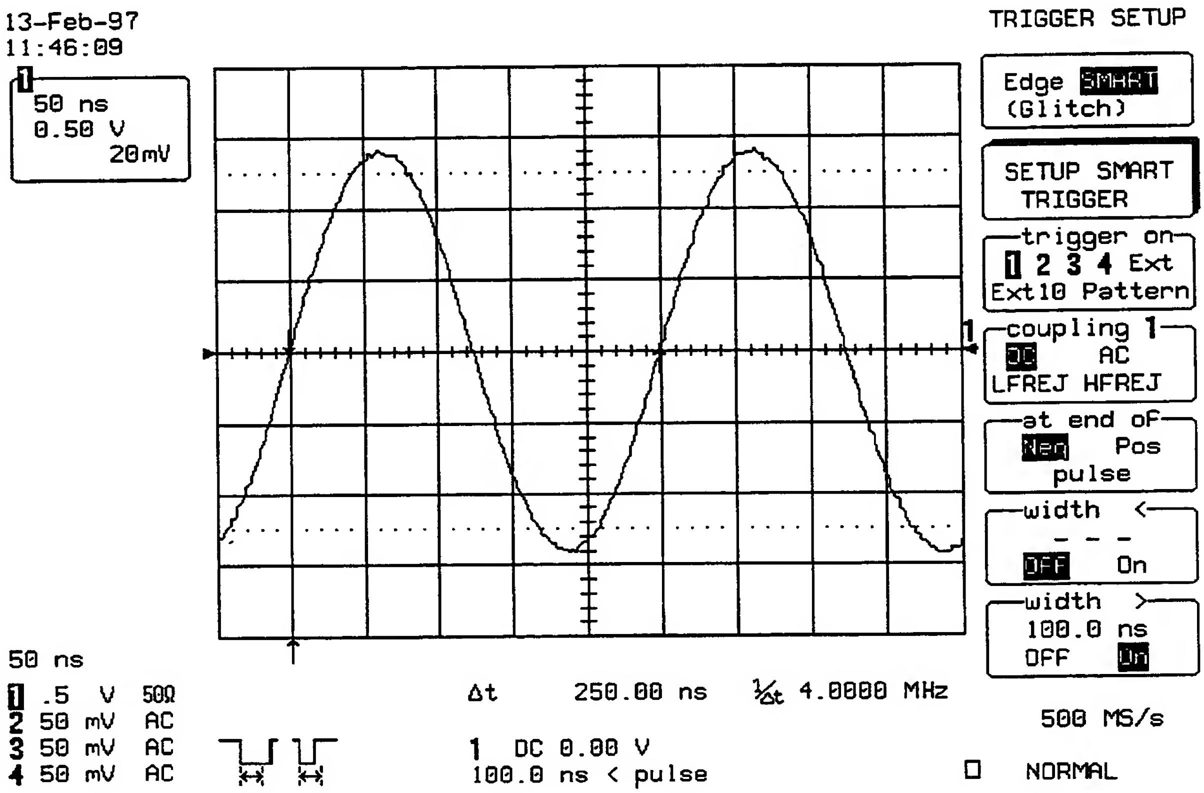
Δt 100.0 ns 1/Δt 10.00 MHz

1 DC 0.00 V
pulse < 100.0 ns

500 MS/s

☐ NORMAL

TRIGGER SETUP
Edge SMART
(Glitch)
SETUP SMART TRIGGER
trigger on
1 2 3 4 Ext
Ext10 Pattern
coupling 1
DC AC
LFREJ HFREJ
at end of
Neg Pos
pulse
width <
100.0 ns
OFF On
width >
- - -
OFF On



13-Feb-97
11:46:09

1
50 ns
0.50 V
20mV

50 ns

1 .5 V 50Ω
2 50 mV AC
3 50 mV AC
4 50 mV AC

Δt 250.00 ns 1/Δt 4.0000 MHz

1 DC 0.00 V
100.0 ns < pulse

500 MS/s

☐ NORMAL

TRIGGER SETUP
Edge SMART
(Glitch)
SETUP SMART TRIGGER
trigger on
1 2 3 4 Ext
Ext10 Pattern
coupling 1
DC AC
LFREJ HFREJ
at end of
Neg Pos
pulse
width <
- - -
OFF On
width >
100.0 ns
OFF On

5.12 Time Base Accuracy

5.12.1 Description

An external sine wave generator of **1 MHz** with a frequency accuracy better than 1 PPM is used.

Specifications

500 MHz clock : accuracy : ≤ **±0.001 % or ≤ ±10 PPM**

5.12.2 500 MHz Clock Verification Procedure

- Recall **574p063.PNL** or configure the DSO

Panel Setups : **Recall FROM DEFAULT SETUP**
Channels trace ON **Channel 1**
Input coupling : **DC 50Ω**
Input gain : **.5 V/div.**
Input offset : **0 mV**
Trigger setup : **Edge**
Trigger on : **1**
Coupling 1 : **DC**
Slope 1 : **Pos**
Level 1 : **0.5 V**
Trigger mode : **Norm**
Delay : **0 %**
Timebase : **.5 µsec/div.**
Channel use : **4**
Record up to : **50 k**

- Connect the **RF output** of the HP8648B generator through a 5ns 50 Ohm BNC coaxial cable into Channel 1.
- Set the generator frequency to **1 MHz.**
- Adjust the generator output amplitude to get **5 divisions peak to peak .**
- Store Channel 1 in Memory 1
- Recall **574p064.PNL** or make the following change :
- Set Post-trigger delay to **5.00 msec**
- Recall Memory **1 to A**

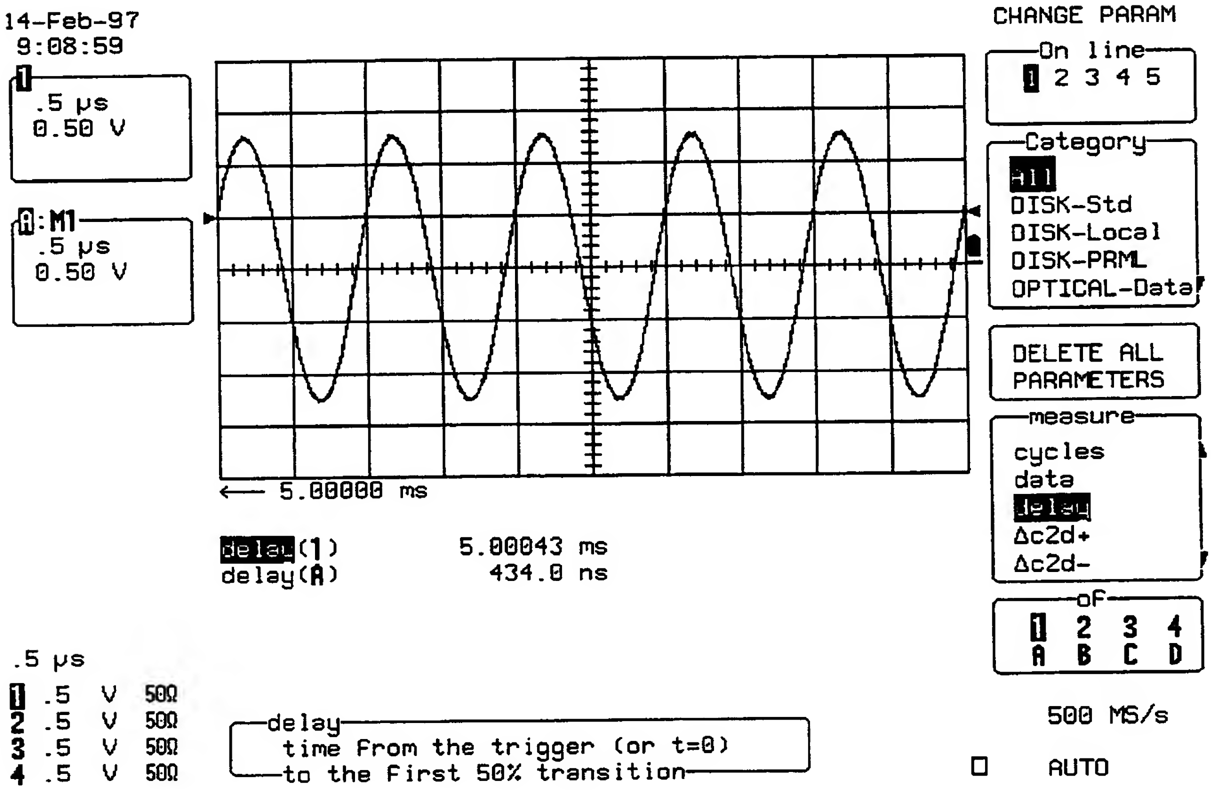
- Press : **Cursors/Measure**
- Measure : **Parameters**
- Mode : **Custom**
- Statistics : **Off**

- Change parameters

- On line 1 : **Delay of 1**
- On line 2 : **Delay of A**

- Check that the displayed Channel 1 trace is **aligned** with the sine wave from memory 1.

- This allows the accuracy of the time base clock to be checked **5000 periods** after the trigger point. A difference of ±**0.05 μsec** corresponds to ±**10 PPM**.



14-Feb-97
9:08:59

1 .5 μs 0.50 V

A:M1 .5 μs 0.50 V

← 5.00000 ms

delay(1) 5.00043 ms
delay(A) 434.0 ns

.5 μs
1 .5 V 50Ω
2 .5 V 50Ω
3 .5 V 50Ω
4 .5 V 50Ω

delay
time from the trigger (or t=0)
to the first 50% transition

500 MS/s

☐ AUTO

- Calculate the Difference **{[delay(A) - delay(1)]+ 5 msec}.**

- Record the test result in Table 22, and compare it to the limit in the test record.

5.13 Overshoot and Rise time (10 % - 90 %)

Specifications

DC 50Ω, 50 mV/div., : overshoot < 20 %, rise time < 0.5 ns
DC 1MΩ, 100 mV/div., : rise time < 1.5 ns

a. DC 50Ω

- Recall **574p065.PNL** or configure the DSO

Panel Setups : **Recall FROM DEFAULT SETUP**
Channels trace ON **Channel 1**
Input coupling : **DC 50Ω on all 4 Channels**
Input gain : **0.1 V/div. on all 4 Channels**
Input offset : **–250 mV on all 4 Channels**
Trigger setup : **Edge**
Trigger on : **1**
Coupling 1 : **DC**
Slope 1 : **Pos**
Level 1 : **250 mV**
Trigger mode : **Norm**
Delay : **30 % Pre-Trigger**
Timebase : **1 nsec/div.**
Channel use : **4**
Record up to : **50 k**
Turn on trace : **A**
Select Math Setup
For Math : **Use at most 1000 points**
Use Math ? : **Yes**
Math Type : **Average**
Avg Type : **Summed**
Of : **Channel 1**
Sweeps : **100**
Turn off trace : **Channel 1**
Cursors/Measure : **Parameters**
Mode : **Custom**
Statistics : **Off**

Change Parameters :
On displayed trace : **A**
On line 1 :
Measure : **Over + of A**
On line 2 :
Measure : **Rise of A**

- Connect the fast pulse generator 4969A and PB049 power adapter, or equivalent as shown in Figure 5-13.
- Set the 4969A frequency to **1 kHz**

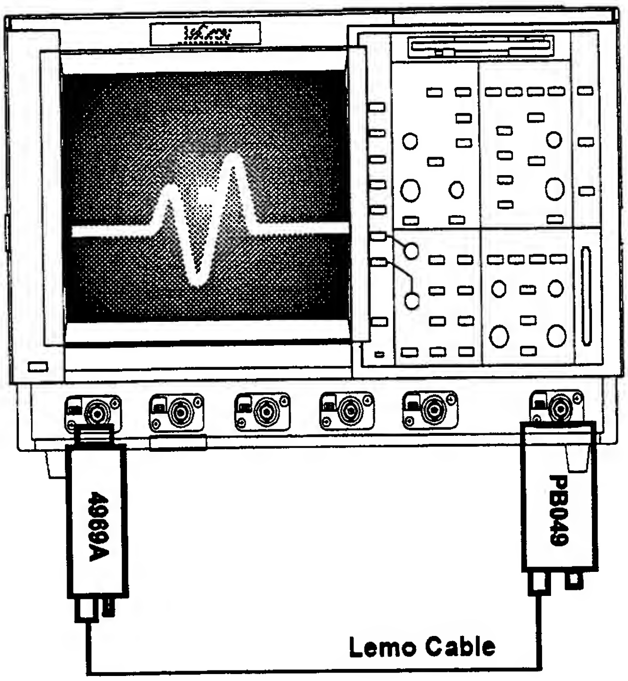
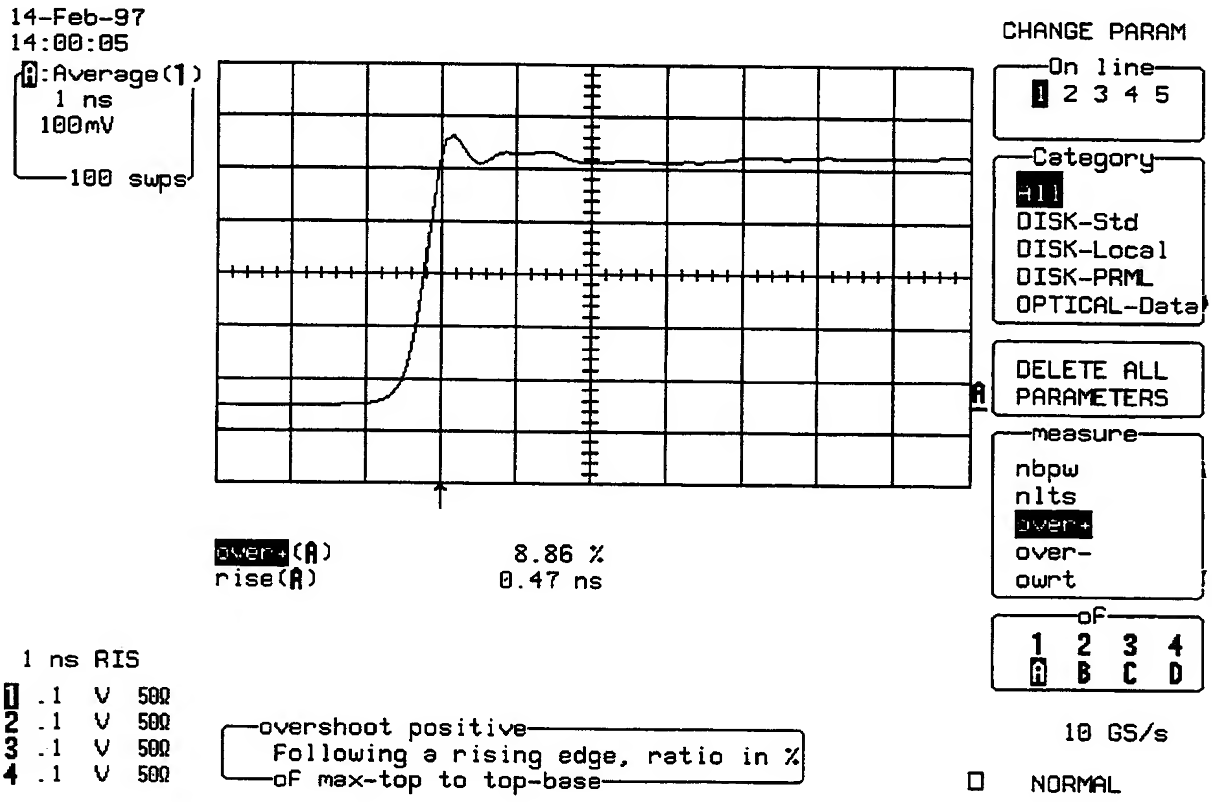


Figure 5-13 : 50 Ω Overshoot & Rise time Equipment Setup

- Press **Clear Sweep**
- After 100 sweeps record **over+(A)** and **rise(A)** measurements in Table 23.
- Repeat the DC 50Ω Overshoot and Rise time test for the other channels, substituting channel controls and input connector.
- Recall **574p066.PNL** for Channel 2, **574p067.PNL** for Channel3 **574p068.PNL** for Channel 4, or configure the DSO as shown in 5.13.a. and make the necessary changes.
- Record the test results in Table 23, and compare the results to the limits.



14-Feb-97
14:00:05
A:Average(1)
1 ns
100mV
100 swps

over+(A) 8.86 %
rise(A) 0.47 ns

1 ns RIS
1 .1 V 50Ω
2 .1 V 50Ω
3 .1 V 50Ω
4 .1 V 50Ω

overshoot positive
Following a rising edge, ratio in %
of max-top to top-base

b. DC 1MΩ

- Recall **574p069.PNL** or configure the DSO as shown in 5.13.a. and make the following change :

Set Input Coupling:		**DC 1MΩ** on all 4 Channels
Input gain	:	**50 mV/div.** on all 4 Channels
Input offset	:	**–150 mV** on all 4 Channels
Trigger Level	:	**75 mV**
Timebase	:	**1 nsec/div.**

- Terminate the output of the 4969A Pulser with the 4962-9 adapter (50Ω to 1MΩ) as shown in Figure 5-14.
- Press **Clear Sweep**. After **100 sweeps** record **over+(A)** and **rise(A)** in Table23.
- Repeat the DC 1MΩ Overshoot and Rise time test for the other channels, substituting channel controls and input connector.
- Recall **574p070.PNL** for Channel 2, **574p071.PNL** for Channel3 **574p072.PNL** for Channel 4, or configure the DSO as shown in 5.13.a. and make the necessary changes.
- Record the test results in Table 23, and compare the results to the limits.

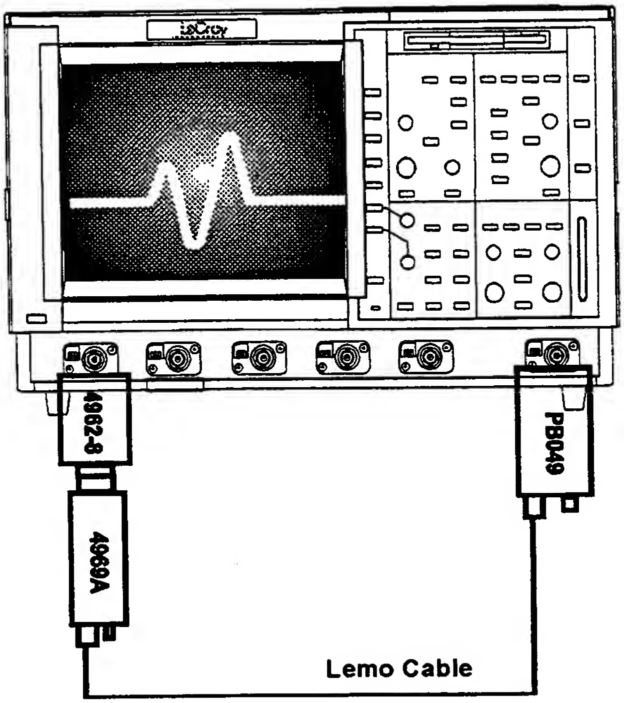
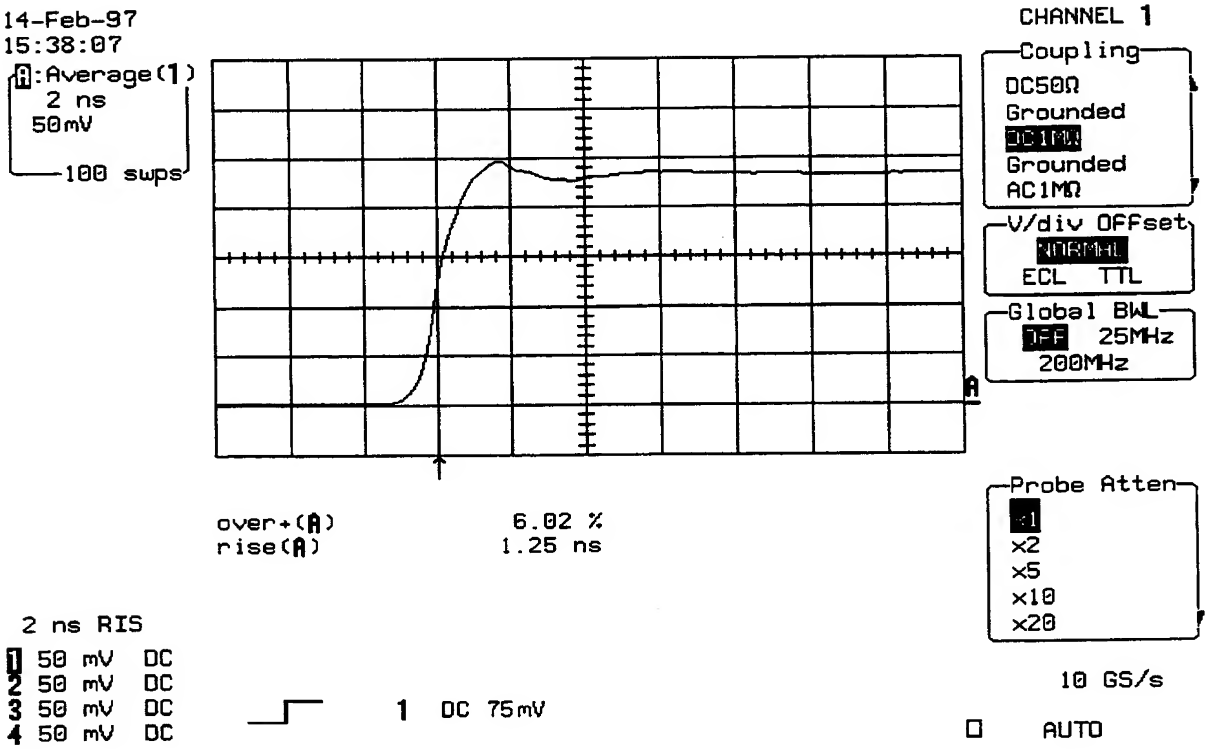


Figure 5-14 : 1MΩ Overshoot & Rise time Equipment Setup



```
14-Feb-97                                              CHANNEL 1
15:38:07                                               Coupling
A:Average(1)                                           DC50Ω
  2 ns                                                 Grounded
 50mV                                                  DC1MΩ
                                                       Grounded
   100 swps                                            AC1MΩ
                                                       V/div Offset
                                                        NORMAL
                                                        ECL   TTL
                                                       Global BWL
                                                        OFF   25MHz
                                                         200MHz

                                                       Probe Atten
over+(A)           6.02 %                              x1
rise(A)            1.25 ns                             x2
                                                       x5
                                                       x10
 2 ns RIS                                              x20
1 50 mV  DC                                              10 GS/s
2 50 mV  DC
3 50 mV  DC                1  DC 75mV
4 50 mV  DC                                            ☐   AUTO
```

5.14 Overload

Specifications

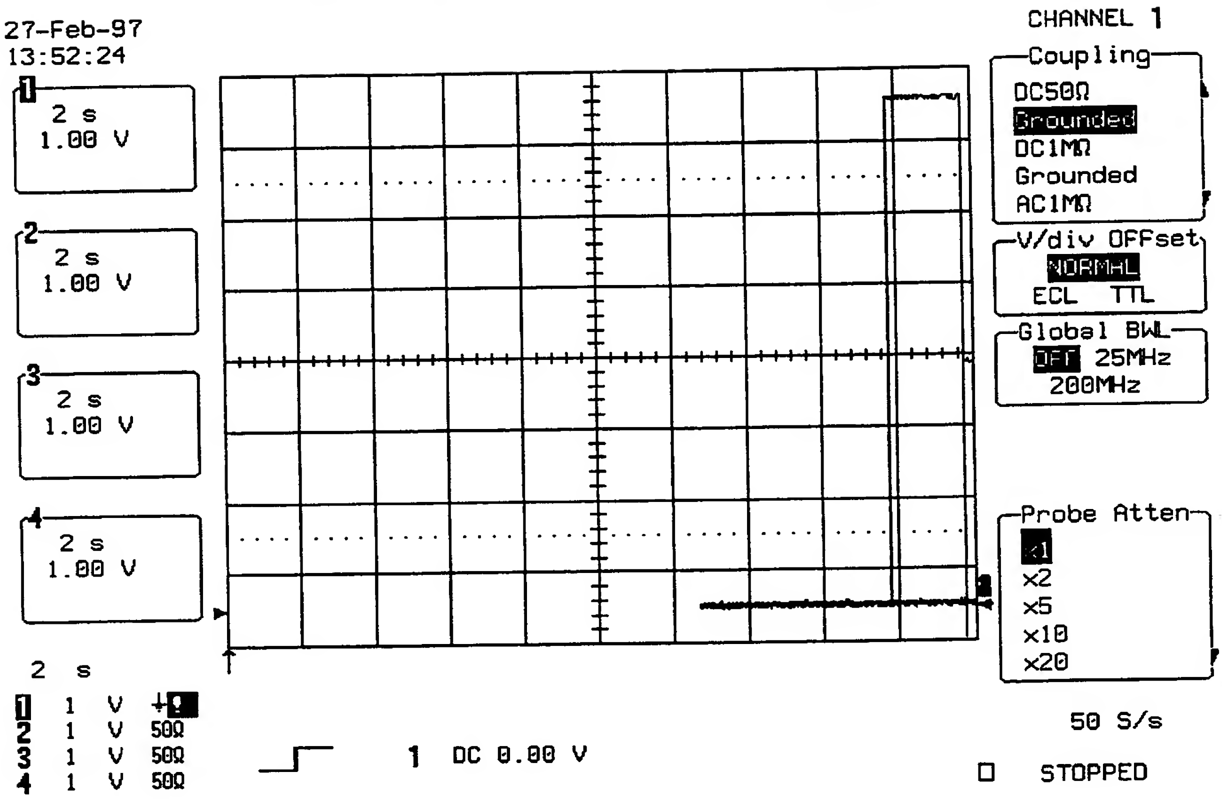
1 Watt into 50Ω : Overload Trip < 17 seconds

a. Channel Overload Trip

- Recall **574p073.PNL** or configure the DSO

Panel Setups : **Recall FROM DEFAULT SETUP**
Channels Trace ON **Channel 1, Channel 2, Channel 3 & Channel 4**
Input coupling : **DC 50Ω** on all 4 Channels
Input gain : **1 V/div.** on all 4 Channels
Input offset : **−3.5 V** on all 4 Channels
Trigger setup : **Edge**
Trigger on : **1**
Coupling 1 : **DC**
Slope 1 : **Pos**
Level 1 : **0 V**
Trigger mode : **Norm**
Delay : **zero**
Timebase : **2 sec/div.**
Channel use : **4**
Record up to : **1000 samples**

- Set the output of the external **DC voltage source** to **+7.07 Volt** corresponding to 1 Watt into 50Ω.
- Connect the **DC voltage reference source** through a BNC cable into Channel1.
- When the channel **overload trips** press **Stop** to halt the acquisition.
- **Measure** on the screen the **overload trip time** and record it in Table 24.
- Repeat the above tests for Channel 2, Channel 3 and Channel 4 substituting the input connector.
- Record the test results in Table 24, and compare the results to the limits.
- For all Channel **clear the overload** by selecting DC 50Ω in the Coupling menu.
- Set Timebase : **5 sec/div.**



- Set the output of the external **DC voltage source** to **+5.00 Volt** corresponding to 0.5 Watt into 50Ω.

- For all channels check that the overload doesn't trip for at least **35** seconds. Record the test result in Table 24.

b. External Overload Trip

- Recall **574p074.PNL**, or configure the DSO as shown in 5.14.and make the following changes.

Channel Trace ON	:	**Channel 2**
Input coupling	:	**DC 1MΩ**
Trigger on	:	**Ext**
Slope Ext	:	**Pos.**
External	:	**DC 50Ω**
Mode	:	**Norm**
Set Trigger level	:	**DC 0.0 mV**

- Connect the test equipment as shown in Figure 5-15.

- Set the output of the external **DC voltage source** to **+7.07 Volt**

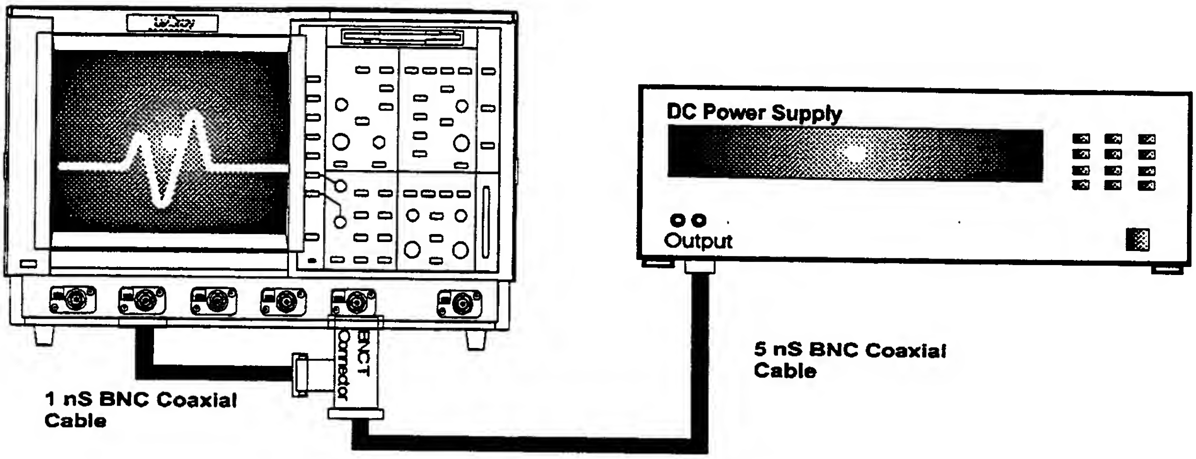
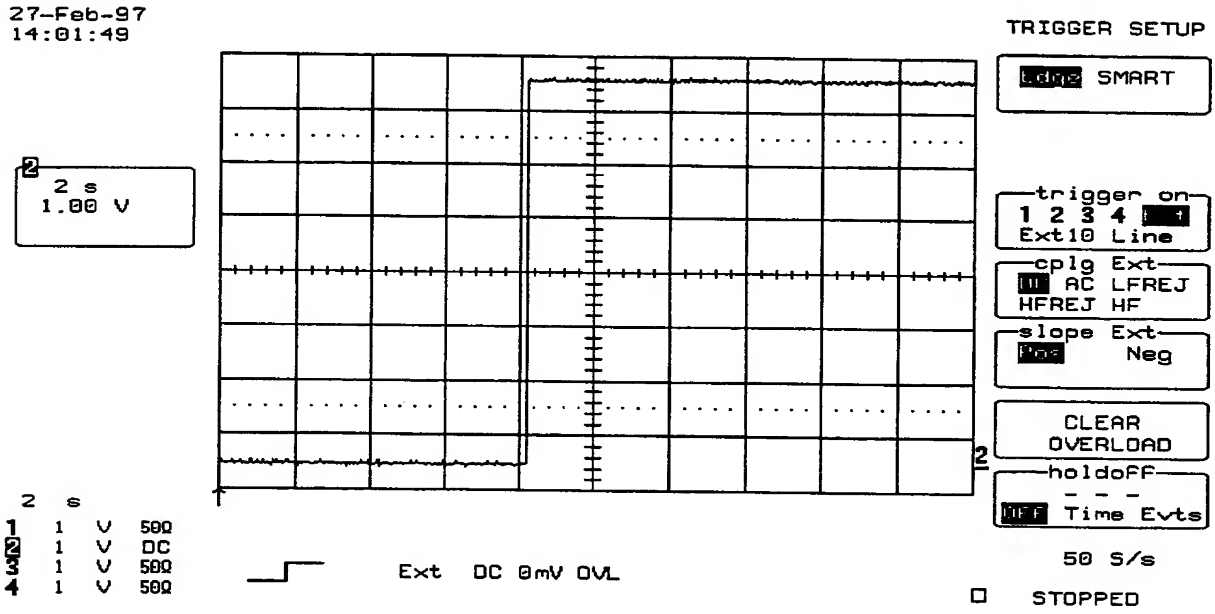


Figure 5-15 : External Overload Equipment Setup

- When the External **overload trips** press **Stop** to halt the acquisition.
- **Measure** on the screen the **overload trip time** and record it in Table 24. Compare the result to the limit in the test record.
- Press **clear overload** in the trigger setup menu.



- Set Timebase : **5 sec/div.**
- Set the output of the external **DC voltage source** to **+5.00 Volt**
- Check that the External overload doesn't trip for at least **35** seconds. Record the test result in Table 24.

LeCroy Digital Storage Oscilloscope

Performance Certificate

LC574A Manual Performance Test Procedure Version A - July 1997

Model_______ Serial Number________ Customer___________

Software Version_______

Inspection Date__________ Next Due__________

Temperature_____ Humidity____%

Tested By_____________ Report Number_________________

Place of Inspection__________________

Condition found____________ Condition Left_____________

Approved By___________________

Test Equipment Used

Instrument	Model	S/N	Cal Due Date
Signal Generator Radio Frequency			
Signal Generator Audio Frequency			
Voltage Generator DC Power Supply			
Step Generator Fast Pulser			
Digital Multimeter Voltmeter, Ohmmeter			

Traceable to_______________

Table 1 : LC574A Test Report

Coupling	Volts/div.	Measured Channel 1 Impedance Ω, MΩ	Measured Channel 2 Impedance Ω, MΩ	Measured Channel 3 Impedance Ω, MΩ	Measured Channel 4 Impedance Ω, MΩ	Measured External Impedance Ω, MΩ	Measured External/10 Impedance Ω, MΩ	Lower Limit Ω, MΩ	Upper Limit Ω, MΩ
DC 1MΩ	50 mV/div							0.99 MΩ	1.01 MΩ
DC 1MΩ	200 mV/div					N/A	N/A	0.99 MΩ	1.01 MΩ
AC 1MΩ	50 mV/div					N/A	N/A	1.08 MΩ	1.14 MΩ
AC 1MΩ	200 mV/div					N/A	N/A	0.98 MΩ	1.02 MΩ
DC 50Ω	50 mV/div						N/A	49.5 Ω	50.5 Ω
DC 50Ω	200 mV/div					N/A	N/A	49.5 Ω	50.5 Ω
DC 1MΩ Grounded	50 mV/div					N/A	N/A	0.98 MΩ	1.02 MΩ

Table 2 : Impedance Test Record

Coupling	Volts/div.	Measured Channel 1 Leakage mV	Measured Channel 2 Leakage mV	Measured Channel 3 Leakage mV	Measured Channel 4 Leakage mV	Measured External Leakage mV	Lower Limit mV	Upper Limit mV
DC 1MΩ	50 mV/div					N/A	–1	+1
DC 1MΩ	200 mV/div					N/A	–1	+1
DC 50Ω	50 mV/div						–1	+1
DC 50Ω	200 mV/div					N/A	–1	+1

Table 3 : Leakage Voltage Test Record

Coupling	Time/Div.	Measured Channel 1 pkpk mV	Measured Channel 2 pkpk mV	Measured Channel 3 pkpk mV	Measured Channel 4 pkpk mV	Limits mV
DC 1MΩ	20 ms					7.2
DC 1MΩ	1 ms					7.2
DC 1MΩ	50 µs					7.2
DC 1MΩ	10 µs					7.2
AC 1MΩ	10 µs					7.2
DC 50Ω	10 µs					7.2
DC 50Ω	50 µs					7.2
~~DC 50Ω 2 Ch Combined~~	~~5 µs~~	~~disabled~~			~~disabled~~	~~7.2~~
~~DC 50Ω 4 Ch Combined~~	~~2 µs~~	~~disabled~~		~~disabled~~	~~disabled~~	~~7.2~~

BMR
31MAR04

Table 4 : Peak to Peak Noise Test Record

Coupling	Time/Div.	Measured Channel 1 sdev mV	Measured Channel 2 sdev mV	Measured Channel 3 sdev mV	Measured Channel 4 sdev mV	Limits mV
DC 1MΩ	20 ms					0.72
DC 1MΩ	1 ms					0.72
DC 1MΩ	50 µs					0.72
DC 1MΩ	10 µs					0.72
AC 1MΩ	10 µs					0.72
DC 50Ω	10 µs					0.72
DC 50Ω	50 µs					0.72
~~DC 50Ω 2 Ch Combined~~	~~5 µs~~	~~disabled~~			disabled	~~1.08~~
~~DC 50Ω 4 Ch Combined~~	~~2 µs~~	~~disabled~~		disabled	disabled	~~1.08~~

BMR
31MAR04

Table 5 : RMS Noise Test Record

Coupling	Volts/div.	Measured Channel 1 Mean (A) mV	Measured Channel 2 Mean (B) mV	Measured Channel 3 Mean (C) mV	Measured Channel 4 Mean (D) mV	Lower Limit mV	Upper Limit mV
DC 1MΩ	5 mV					–2	+2
DC 1MΩ	10 mV					–1.6	+1.6
DC 1MΩ	20 mV					–3.2	+3.2
DC 1MΩ	50 mV					–8	+8
DC 1MΩ	.1 V					–16	+16
DC 1MΩ	1 V					–160	+160

Table 6 : DC 1MΩ Ground Line Test Record

Coupling	Volts/div.	Measured Channel 1 Mean (A) mV	Measured Channel 2 Mean (B) mV	Measured Channel 3 Mean (C) mV	Measured Channel 4 Mean (D) mV	Lower Limit mV	Upper Limit mV
DC 50Ω	5 mV					–2	+2
DC 50Ω	10 mV					–1.6	+1.6
DC 50Ω	20 mV					–3.2	+3.2
DC 50Ω	50 mV					–8	+8
DC 50Ω	.1 V					–16	+16
DC 50Ω	1 V					–160	+160
~~DC 50Ω 2 Ch Combined~~	~~.2 V~~	~~disabled~~			~~disabled~~	~~–48~~	~~+48~~
DC 50Ω 4 Ch Combined	.2 V	disabled		disabled	disabled	–64	+64

BMR 31MAR04

Table 7 : DC 50Ω Ground Line Test Record

Volts /div.	Attenuator	P S Output	Measured Channel 1 V & mV			Measured Channel 2 V & mV			Measured Channel 3 V & mV			Measured Channel 4 V & mV			Limits
			DMM 1	Mean (A)	Δ 1 Mean–DMM	DMM 2	Mean (B)	Δ 2 Mean–DMM	DMM 3	Mean (C)	Δ 3 Mean–DMM	DMM 4	Mean (D)	Δ 4 Mean–DMM	mV
5 mV	X 100	+1.5 V													±1.2
10 mV	X 100	+3.0 V													±1.6
20 mV	X 100	+6.0 V													±3.2
50 mV	X 10	+1.5V													±8
.1 V	X 10	+3.0 V													±16
1 V	X 1	+3.0 V													±160

Table 8 : DC 50Ω, Positive DC Accuracy Test Record

Volts /div.	Attenuator	P S Output	Measured Channel 1 V & mV			Measured Channel 2 V & mV			Measured Channel 3 V & mV			Measured Channel 4 V & mV			Limits
			DMM 1	Mean (A)	Δ 1 Mean–DMM	DMM 2	Mean (B)	Δ 2 Mean–DMM	DMM 3	Mean (C)	Δ 3 Mean–DMM	DMM 4	Mean (D)	Δ 4 Mean–DMM	mV
5 mV	X 100	+1.5 V													±1.2
.1 V	X 10	+3.0 V													±16
5 V	X 1	+15.0 V													±800

Table 9 : DC 1MΩ, Positive DC Accuracy Test Record

Volts /div.	Attenuator	P S Output	Measured Channel 1 V & mV			Measured Channel 2 V & mV			Measured Channel 3 V & mV			Measured Channel 4 V & mV			Limits
			DMM 1	Mean (A)	Δ 1 Mean–DMM	DMM 2	Mean (B)	Δ 2 Mean–DMM	DMM 3	Mean (C)	Δ 3 Mean–DMM	DMM 4	Mean (D)	Δ 4 Mean–DMM	mV
5 mV	X 100	–1.5 V													±1.2
10 mV	X 100	–3.0 V													±1.6
20 mV	X 100	–6.0 V													±3.2
50 mV	X 10	–1.5V													±8
.1 V	X 10	–3.0 V													±16
1 V	X 1	–3.0 V													±160

Table 10 : DC 50Ω, Negative DC Accuracy Test Record

Volts /div.	Attenuator	P S Output	Measured Channel 1 V & mV			Measured Channel 2 V & mV			Measured Channel 3 V & mV			Measured Channel 4 V & mV			Limits
			DMM 1	Mean (A)	Δ 1 Mean–DMM	DMM 2	Mean (B)	Δ 2 Mean–DMM	DMM 3	Mean (C)	Δ 3 Mean–DMM	DMM 4	Mean (D)	Δ 4 Mean–DMM	mV
5 mV	X 100	–1.5 V													±1.2
.1 V	X 10	–3.0 V													±16
5 V	X 1	–15.0 V													±800

Table 11 : DC 1MΩ, Negative DC Accuracy Test Record

Coupling	DSO Offset	P S Output	Measured Channel 1 V & mV			Measured Channel 2 V & mV			Measured Channel 3 V & mV			Measured Channel 4 V & mV			Limits
DC			DMM 1	Mean (A)	Δ 1 Mean–DMM	DMM 2	Mean (B)	Δ 2 Mean–DMM	DMM 3	Mean (C)	Δ 3 Mean–DMM	DMM 4	Mean (D)	Δ 4 Mean–DMM	mV
50 Ω	+1 V	–1 V													±11.2
1 MΩ	+1 V	–1 V													±11.2

Table 12 : Positive Offset Test Record

Coupling	DSO Offset	P S Output	Measured Channel 1 V & mV			Measured Channel 2 V & mV			Measured Channel 3 V & mV			Measured Channel 4 V & mV			Limits
DC			DMM 1	Mean (A)	Δ 1 Mean–DMM	DMM 2	Mean (B)	Δ 2 Mean–DMM	DMM 3	Mean (C)	Δ 3 Mean–DMM	DMM 4	Mean (D)	Δ 4 Mean–DMM	mV
50 Ω	–1 V	+1 V													±11.2
1 MΩ	–1 V	+1 V													±11.2

Table 13 : Negative Offset Test Record

Frequency	Measured Power	Generator Amplitude	Measured Channel 1		Measured Channel 2		Measured Channel 3		Measured Channel 4		Lower Limit	Upper Limit
MHz	mW	mV	Sdev(1) mV	Ratio(1) to 0.3	Sdev(2) mV	Ratio(2) to 0.3	Sdev(3) mV	Ratio(3) to 0.3	Sdev(4) mV	Ratio(4) to 0.3		
0.300	0.200			N/A		N/A		N/A		N/A	N/A	N/A
1.1	0.200										0.94	1.06
30.1	0.200										0.94	1.06
250.1	0.200										0.88	1.13
750.1	0.200										0.84	1.18
1000.1	0.200										0.70	N/A

Table 14 : DC 50Ω, 50 mV/div. Bandwidth Test Record

Frequency	Measured Power	Generator Amplitude	Measured Channel 1		Measured Channel 2		Measured Channel 3		Measured Channel 4		Lower Limit	Upper Limit
MHz	mW	mV	Sdev(1) mV	Ratio(1) to 0.3	Sdev(2) mV	Ratio(2) to 0.3	Sdev(3) mV	Ratio(3) to 0.3	Sdev(4) mV	Ratio(4) to 0.3		
0.300	0.800			N/A		N/A		N/A		N/A	N/A	N/A
1.1	0.800										0.94	1.06
30.1	0.800										0.94	1.06
250.1	0.800										0.88	1.13
750.1	0.800										0.84	1.18
1000.1	0.800										0.70	N/A

Table 15 : DC 50Ω, 100 mV/div. Bandwidth Test Record

DSO Global BWL	Amplitude at 300 kHz	Measured Channel 1		Measured Channel 2		Measured Channel 3		Measured Channel 4		Lower Limit	Upper Limit
MHz	Sdev mV	Sdev(1) mV	Freq(1) MHz	Sdev(2) mV	Freq(2) MHz	Sdev(3) mV	Freq(3) MHz	Sdev(4) mV	Freq(4) MHz	MHz	MHz
25	200	140		140		140		140		10	37
200	200	140		140		140		140		110	290

Table 16 : DC 50Ω, Bandwidth Limiter Test Record

Frequency	Measured Channel 1		Measured Channel 2		Measured Channel 3		Measured Channel 4		Lower Limit
MHz	Sdev(1) mV	Ratio(1) to 0.3	Sdev(2) mV	Ratio(2) to 0.3	Sdev(3) mV	Ratio(3) to 0.3	Sdev(4) mV	Ratio(4) to 0.3	
0.300	200	N/A	200	N/A	200	N/A	200	N/A	N/A
360 ~~500.1~~ BMZ									0.7

31MAR04

Table 17 : DC 1MΩ, 100 mV/div. Bandwidth Test Record

Trigger Level mV	Trigger Slope	Channel 1 Measured DC Trigger Level (1) mV	Channel 2 Measured DC Trigger Level (2) mV	Channel 3 Measured DC Trigger Level (3) mV	Channel 4 Measured DC Trigger Level (4) mV	Lower Limit mV	Upper Limit mV
0	Pos					–30	+30
0	Neg					–30	+ 30
+300	Pos					+270	+330
+300	Neg					+270	+330
–300	Pos					–270	–330
–300	Neg					–270	–330

Table 18 : Channel DC Trigger Test Record

Trigger Level mV	Trigger Slope	Channel 1 Measured HFREJ Trigger Level (1) mV	Channel 2 Measured HFREJ Trigger Level (2) mV	Channel 3 Measured HFREJ Trigger Level (3) mV	Channel 4 Measured HFREJ Trigger Level (4) mV	Lower Limit mV	Upper Limit mV
0	Pos					–50	+50
0	Neg					–50	+ 50
+300	Pos					+250	+350
+300	Neg					+250	+350
–300	Pos					–250	–350
–300	Neg					–250	–350

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31MAR04

Table 19 : Channel HFREJ Trigger Test Record

Trigger Slope	External Trigger Level	External DC	External HFREJ	External Limits		External/10 Trigger Level	External/10 DC	External/10 HFREJ	External/10 Limits	
	mV	Measured DC Trigger Level (Ext) mV	Measured HFREJ Trigger Level (Ext) mV	Lower mV	Upper mV	V	Measured DC Trigger Level (Ext/10) V	Measured HFREJ Trigger Level (Ext/10) V	Lower V	Upper V
Pos	0			–50	+50	0			–0.5	+0.5
Neg	0			–50	+50	0			–0.5	+0.5
Pos	+300			+250	+350	+3			+2.5	+3.5
Neg	+300			+250	+350	+3			+2.5	+3.5
Pos	–300			–250	–350	–3			–2.5	–3.5
Neg	–300			–250	–350	–3			–2.5	–3.5

Table 20 : External & Ext/10 DC and HFREJ Trigger Test Record

Smart Trigger Pulse Width ns	Generator Frequency MHz	Width <	Width >	Triggered	Pass
< 10	100	On	Off	Yes	
< 10	100	Off	On	No	
> 10	40	Off	On	Yes	
> 10	40	On	Off	No	
< 100	10	On	Off	Yes	
< 100	10	Off	On	No	
> 100	4	Off	On	Yes	
> 100	4	On	Off	No	

Table 21 : Smart Trigger Test Record

Generator Frequency MHz	Post Trigger Delay msec	Delay (A) ns	Delay (1) msec	Difference delay(A) –delay(1)+5msec	Lower Limit µsec	Upper Limit µsec
1.00000	5.00000				-0.05	+0.05

Table 22 : Time Base Test Record

Coupling	Measured Channel 1 Over+(A) %	Measured Channel 2 Over+(B) %	Measured Channel 3 Over+(C) %	Measured Channel 4 Over+%(D) %	Overshoot Limit %	Measured Channel 1 Rise(A) ns	Measured Channel 2 Rise(B) ns	Measured Channel 3 Rise(C) ns	Measured Channel 4 Rise(D) ns	Rise time Limit ns
DC 50Ω					0 to 20					0.5
DC 1MΩ					–7 to 20					1.6

Table 23 : Rise time and Overshoot Test Record

DC Reference Source Volt	Measured Channel 1 Overload Trip sec	Measured Channel 2 Overload Trip sec	Measured Channel 3 Overload Trip sec	Measured Channel 4 Overload Trip sec	Measured External Overload Trip sec	Overload Trip Limit sec
7.07						< 17
5.00						> 35

Table 24 : Overload Trip Test Record

6. Maintenance

6.1 Introduction

This section contains information necessary to disassemble, assemble, maintain, calibrate and troubleshoot the LeCroy LC574A, LC574AM & LC574AL digital oscilloscopes.

6.1.1 Safety Precautions

The ⚡symbol used in this manual indicates dangers that could result in personal injury.

The ⚠symbol used in this manual identify conditions or practices that could damage the instrument.

⚠The following servicing instructions are for use by qualified personnel only. Do not perform any servicing other than contained in service instructions. Refer to procedures prior to performing any service.

⚡Exercise extreme safety when testing high energy power circuits. Always turn the power OFF, disconnect the power cord, discharge the cathode ray tube and all capacitors before disassembling the instrument.

6.1.2 Antistatic Precautions

⚠Any static charge that builds on your person or clothing may be sufficient to destroy CMOS components, integrated circuits, Gate array's..........etc.

In order to avoid possible damage, the usual precautions against static electricity are required.

- Handle the boards in antistatic boxes or containers with foam specially designed to prevent static build-up.
- Ground yourself with a suitable wrist strap.
- Disassemble the instrument at a properly grounded work station equipped with antistatic mat.
- When handling the boards, do not touch the pins.
- Stock the boards in antistatic bags.

6.2 Disassembly and Assembly Procedure

The disassembly and assembly procedures detailed below refer to the views of figures shown in section 8.

6.2.1 Disassembly Procedure

Please study the figures in section 8 before attempting disassembly.
Before removing any parts from the LeCroy LC574A, be sure to read carefully the instructions referring to those parts, noting any precautions needed to avoid problems.

Extreme caution should be taken in protecting the glass CRT face-plate from damage (e.g. scratch marks etc.) when handling, in particular when inserting or removing from the instrument.

a. Removal of the Upper Cover Assembly

The upper cover disassembly procedure refers to the view of figure 8-1.

- Remove three M3X6 screws underneath the plastic bezel.
- Pivot up the plastic bezel and remove it from the front frame by disengaging the hooks on the top of the bezel from the corresponding front frame lugs.

The top cover is secured by seven M3x6 screws on the front panel assembly and by two M5 screws on the rear panel.

- Remove the seven M3X6 screws (three M3X6 on top, two M3X6 on left and two M3X6 on right).
- Remove the two M5 screws that secure the two upper feet on the upper cover and rear panel.
- Carefully slide the upper cover off the unit (disconnect optional Internal printer cables from power supply and processor board).

b. Removal of the Front Frame Assembly with Color Monitor

The front frame disassembly procedure refers to the view of figure 8-2 and 8-10.

- Remove the upper cover assembly (6.2.1.a)
- Remove two M3X6 screws that secure the front frame on both side of the lower cover.
- With a long hex screwdriver unlock two M4X5 screws that secure the monitor on rear of the main board upper shield, and two M3X6 screws that secure the front frame on the main board upper shield.
- Disconnect the monitor VGA cable from the F9601-2 card connector J1
- Disconnect the monitor power cable from the F9601-8 board connector J3

- Disconnect the monitor cable from the external adjustment board.
- Disconnect the floppy cable from the processor board connector J1
- Disconnect the front panel cable from the processor board connector J2

The front frame assembly with monitor, front panel and floppy disk drive can with care be removed forward from the unit.

c. Removal of the Processor Board

The processor board disassembly procedure refers to the view of figure 8-1 & 8-20.

- Remove the upper cover assembly (6.2.1.a)
- Remove the front frame assembly (6.2.1.b)
- Disconnect the processor cable J10 from the F9601-2 card connector J4
- Disconnect the processor cable J9 from the F9300-4 RS232 & GPIB interface and optional F9300-8 hard disk interface.

The processor can now be removed vertically from the main board connector J1.

d. Removal of the Power Supply Assembly

The power supply disassembly procedure refers to the view of figure 8-3 & 8-20.

- Remove the upper cover assembly (6.2.1.a)
- Remove the front frame assembly (6.2.1.b)
- Remove the processor board (6.2.1.c)

If the instrument is equipped with hard disk option, remove the F9300-8 interface from the rear panel, by removing two M3X6 screws that secure it to the rear panel.

- Remove two M3X6 screws that secure the power supply on the main board upper shield.
- Remove two M3X6 screws that secure the power supply on the rear panel.
- Disconnect the power supply cable from the F9601-8 board connector J2
- Disconnect the fan power cable from the power supply connector J5
- Disconnect the power supply cable from the F9654-32 main board connector J2

The power supply can now be removed from the oscilloscope.

e. Removal of the Upper Shield Assembly

The upper shield disassembly procedure refers to the view of figure 8-4.

- Remove the upper cover assembly (6.2.1.a)

- Remove the front frame assembly (6.2.1.b)
- Remove the processor board (6.2.1.c)
- Remove the power supply (6.2.1.d)

- Remove twelve M3x20 screws that secure the shield to the lower cover.
- Remove six M3X5 screws on both side of the lower cover.
- Remove six M2.5x6 screws that secure the upper shield to the main board front panel.
- Remove three M3X6 screws that secure the upper shield to the rear panel.
- Disconnect the power cable from the F9601-8 board connector J1.

The upper shield can now be removed from the oscilloscope.

f. Removal of the Rear Panel Assembly

The rear panel disassembly procedure refers to the view of figure 8-5.

- Remove the upper cover assembly (6.2.1.a)
- Remove the front frame assembly (6.2.1.b)
- Remove the processor board (6.2.1.c)
- Remove the power supply (6.2.1.d)
- Remove the upper shield (6.2.1.e)

- Remove two M5 screws that secure the two lower feet to the rear panel and lower cover.

The rear panel assembly can now be removed from the oscilloscope.

g. Removal of the Main Board Assembly

The main board disassembly procedure refers to the view of figure 8-7 & 8-8.

- Remove the upper cover assembly (6.2.1.a)
- Remove the front frame assembly (6.2.1.b)
- Remove the processor board (6.2.1.c)
- Remove the power supply (6.2.1.d)
- Remove the upper shield (6.2.1.e)
- Remove the rear panel (6.2.1.f)

- Remove the two acquisition memories
- Remove twelve M3x6 screws that secure the main board to the lower cover.
- Remove three M3X6 standoffs that secure the main board to the lower cover.

The main board can now be removed from the oscilloscope.

6.2.2 Assembly Procedure

Reassemble the unit in the reverse order, check that all screws shown on the drawings in section 8 are used and properly torqued.
Verify that all cables are correctly connected.

Assembly Note :

- **Bezel** : The plastic bezel should be in contact with the CRT all around the screen area. The bezel should not be deformed.
  Adjust to 1.5 mm wide the joint between the bezel and the upper cover.
- **Color Monitor** : Being careful not to damage the protective ground braid.
- **Fan** : Check the fan cable direction. Note the air flow, the fan extracts air from the unit and expels it.
- **Feet** : Check that the lower feet and rear feet are aligned and properly tightened before re-assembly.
- **Filter** : Check that the earth wire is correctly installed and tightened.
- **Floppy** : Adjust the floppy position to obtain the front face tangential to face of the front panel. Check that the door is moving freely and shuts correctly.
  Insert a floppy and eject it to check the mechanism.
- **Front Panel** : Check that knobs rotate freely, are the right size and in the right place.
- **Main Board** :The main card must be parallel and tacked against the bend of the lower cover. Being careful not to bend the board or damage components underneath. The main board must be programmed for the correct memory size. This can only be performed at a factory authorized service center.
- **Rear Panel** : Check the CD9610 trimming adjustments are aligned with the holes in the rear panel.
- **Processor** : Check that the memory card insertion guide is correctly inserted in the front panel.
- **Power supply** : Extend the power supply cable to connect it to the main board.
- **Printer** : If the graphic printer is used, before closing don't forget to plug the input cable to the option and the driver cable to the processor card.

6.3 Software Update Procedure

6.3.1 Upgrading Firmware

LeCroy Corporation has a policy of continually improving and upgrading its products.

The LC574A instrument is equipped with flash Prom on processor board. The software is updated to the latest version using either the floppy disk drive or the memory card interface.

After any software change, reboot the scope or perform a general reset of the instrument by simultaneously depressing the autosetup button, the top menu button and the return button.

To update an LC574A scope from software version earlier than 7.1.0, first update to 7.1.0, then proceed to update as described below.

6.3.1.1 Firmware Update Procedure from Floppy

a. Creating the Disk

- Format a single high density 1.44Mb floppy in the scope (not in the PC)
- Create a directory LECROY_P in the root of the card
- Copy the file LCXXX7XX.FLA, into the directory created above.
- Label this disk " Firmware Update Disk "

b. Performing the Update from Floppy

- Cycle power to the scope with no floppy or card inserted.
- When the scope boots enter the "Show Status" , "System" menu to verify that version 7.1.0 or later is running.

- Insert the Firmware Update Disk into the scope's floppy drive.
- Select "Utilities", "Special Modes", "Firmware Update", "Update from Floppy" .
- Press twice "Update Flash".

- When the operation is complete remove the floppy and reboot the scope.
- When the scope boots enter the "Show Status", "System " menu to verify that version 7.X.X is currently running.

6.3.1.2 Firmware Update Procedure from Memory Card

a. Creating the Update Card

- Follow the above procedure to update FLASH to 7.X.X from a Floppy Disk.
- Enter the "Internal Diagnostics Menu" by simultaneously pressing the Third and Fourth menu push buttons on the right hand side of the CRT, then release them, and then press the Fifth.
- Select "Flash Update" and use "Xfer Flash to Card" option to create the card. This card will not be readable in a PC since it will not contain a standard DOS file system.

b. Performing the Update from Card

- Cycle power to the scope with no floppy or card inserted.
- When the scope boots enter the "Show Status" , "System" menu to verify that version 7.1.0 or later is running.
- Insert the Card created above into the PCMCIA Slot.
- Select "Utilities", "Special Modes", "Firmware Update", "Update from Card" .
- Press twice "Update Flash".
- When the operation is complete remove the card and reboot the scope.
- When the scope boots enter the "Show Status", "System " menu to verify that version 7.X.X is currently running.

6.3.2 Changing Software Options

The Software option's selection GAL is located on the processor board at location A48. Insert or replace the GAL to select new options.
Make sure that the orientation notch is correctly aligned with the PCB.

6.3.2.1 Software Option Selection GAL

The following software options are available:

• WP01	Advanced Math Firmware
• WP02	Basic FFT Firmware
• WP03	Parameter Distribution Analysis Firmware

• DDM	Disk Drive Measurements
• PRML	Partial Response Maximum Likelihood
• ORM	Optical Recording Measurement
• DDFA	Disk Drive Failure Analysis
• MC01	PCMCIA Memory Card
• MT01/02	Automatic Mask Tester

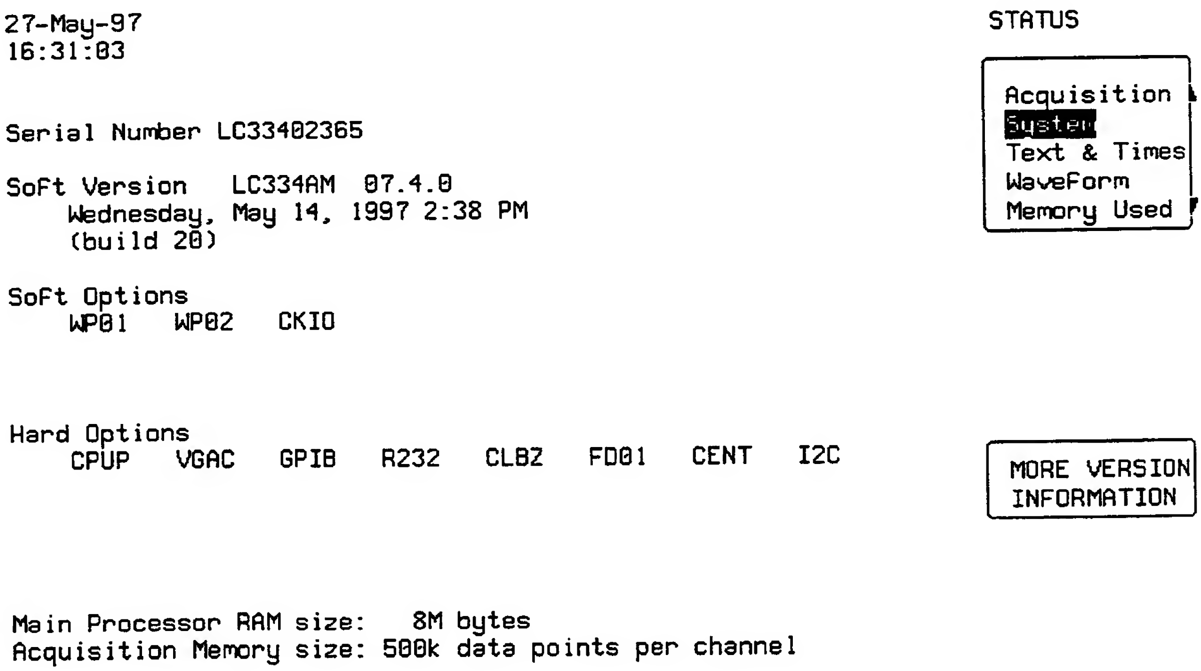
MC01 200	DDFA 080	ORM 040	PRML 020	DDM 008	WP03 004	WP02 002	WP01 001	KEY XXX-R XXX = Software option,
no	no	no	no	no	no	no	no	GAL Not Necessary
no	no	no	no	no	no	no	**yes**	**KEY 001-A**
no	no	no	no	no	no	**yes**	no	**KEY 002-A**
no	no	no	no	no	no	yes	yes	KEY 003-A
no	no	no	no	no	**yes**	no	no	**KEY 004-A**
no	no	no	no	no	yes	no	yes	KEY 005-A
no	no	no	no	no	yes	yes	no	KEY 006-A
no	no	no	no	no	yes	yes	yes	KEY 007-A
no	no	no	no	**yes**	no	no	no	**KEY 008-A**
no	no	no	no	yes	no	no	yes	KEY 009-A
no	no	no	no	yes	no	yes	no	KEY 00A-A
no	no	no	no	yes	no	yes	yes	KEY 00B-A
no	no	no	no	yes	yes	no	no	KEY 00C-A
no	no	no	no	yes	yes	no	yes	KEY 00D-A
no	no	no	no	yes	yes	yes	no	KEY 00E-A
no	no	no	no	yes	yes	yes	yes	KEY 00F-A
no	no	no	**yes**	no	no	no	no	**KEY 020-A**
no	no	no	yes	no	no	no	yes	KEY 021-A
no	no	no	yes	no	no	yes	no	KEY 022-A
no	no	no	yes	no	no	yes	yes	KEY 023-A
no	no	no	yes	no	yes	no	no	KEY 024-A
no	no	no	yes	no	yes	no	yes	KEY 025-A
no	no	no	yes	no	yes	yes	no	KEY 026-A
no	no	no	yes	no	yes	yes	yes	KEY 027-A
no	no	no	yes	yes	no	no	no	KEY 028-A
no	no	no	yes	yes	no	no	yes	KEY 029-A
no	no	no	yes	yes	no	yes	no	KEY 02A-A
no	no	no	yes	yes	no	yes	yes	KEY 02B-A
no	no	**yes**	no	no	no	no	no	**KEY 040-A**
no	no	yes	no	no	no	no	yes	KEY 041-A
no	no	yes	no	no	no	yes	no	KEY 042-A
no	no	yes	no	no	no	yes	yes	KEY 043-A
no	**yes**	no	no	no	no	no	no	**KEY 080-A**
no	yes	no	no	no	no	no	yes	KEY 081-A
no	yes	no	no	no	no	yes	no	KEY 082-A
no	yes	no	no	no	no	yes	yes	KEY 083-A
....✂....	....✂....	....✂....	....✂....	....✂....	....✂....	....✂....	....✂....	................✂..............
yes	no	no	no	no	no	no	no	**KEY 200-A**
yes	no	no	no	no	no	no	yes	KEY 201-A
yes	no	no	no	no	no	yes	no	KEY 202-A
yes	no	no	no	no	no	yes	yes	KEY 203-A
yes	no	no	no	no	yes	no	no	KEY 204-A
yes	no	no	no	no	yes	no	yes	KEY 205-A
yes	no	no	no	no	yes	yes	no	KEY 206-A
yes	no	no	no	no	yes	yes	yes	KEY 207-A
yes	no	no	no	yes	no	no	no	KEY 208-A
....✂....	....✂....	....✂....	....✂....	....✂....	....✂....	....✂....	....✂....	................✂..............
yes	yes	yes	yes	yes	yes	yes	yes	KEY 2EF-A

6.3.3 Processor Board Exchange Procedure

The replacement board is supplied without any options. Therefore the existing GAL (Loc. A48) must be transferred from the faulty board to the new board. After upgrading firmware or changing the software option, check that the scope boots correctly. Then check in the system summary, by using the show status button on the front panel, the software version, software options and serial number.

The serial number of the LC574A oscilloscope is loaded in the real time clock memory which is battery backed up. If it becomes necessary to replace the processor board, the serial number must be loaded in the memory of the new board by using LeCroy program " LeCalsoft " under GPIB remote control.

To run " LeCalsoft " type SKP.exe, in the main menu type S, and follow the instructions, use five digits to enter the serial number (i.e. 02365).



```
27-May-97
16:31:03


Serial Number LC33402365

Soft Version   LC334AM  07.4.0
    Wednesday, May 14, 1997 2:38 PM
    (build 20)

Soft Options
    WP01   WP02   CKIO


Hard Options
    CPUP   VGAC   GPIB   R232   CLBZ   FD01   CENT   I2C



Main Processor RAM size:   8M bytes
Acquisition Memory size: 500k data points per channel
```

6.4 Equipment and Spare Parts Recommended for Service

6.4.1 Test Equipment Required

See Table 5-1 in section 5.2.

6.4.2 LC574A, LC574AM and LC574AL Spare Parts

LeCroy P/N	Assembly	Adjustments	Performance Tests
F9601-1-8	Power PC, 2X4MB DRAM for LC574A & LC574AM	None	None
F9601-1-64	Power PC, 2X32MB DRAM for LC574AL	None	None
F9601-2	Internal + External VGA Centronics Interface	None	None
9384M-2	Acquisition Memory 2X500k for LC574A & AM	None	None
9384MEM-2	Acquisition Memory 2 x 2M for LC574AL	None	None
F9384-31	Acquisition Card	6.5.2	Chapter 5
F9354-4	Timebase Board	None	Chapter 5
F9300-4	GPIB Interface RS232 Interface	None	None
FP9604	Front Panel Assy 4 Channel	None	None
F9602-5	Keypad	None	None
F9604-5	Front Panel	None	None
F9601-6	Floppy Disk Drive Assy	None	None
F9300-7	Printer Interface	None	None
F9300-8	Hard Disk Interface	None	None
F9601-8	Main Switch Board	None	None
CD9610	CD9600 10"Color Display, VGA 640 x 480 points with Magnetic Cancellation Coil.	6.5.3	None
PSLC574	Power Supply LC574	6.5.1	None
900024	Power Supply LC574 w/Fan	6.5.1	None

The other parts are not on the above list because the probability of failure is very low.

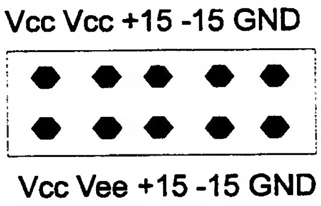
See chapter 7, 8 & 9 for mechanical and electrical replaceable parts.

6.5 Calibration Procedures

The following section includes the manual adjustments of the power supply, front end acquisition board and color monitor, but does not contain any calibration instructions about the Analog to Digital Converter.
The ADC adjustments require complex test set-up and calibration Software.

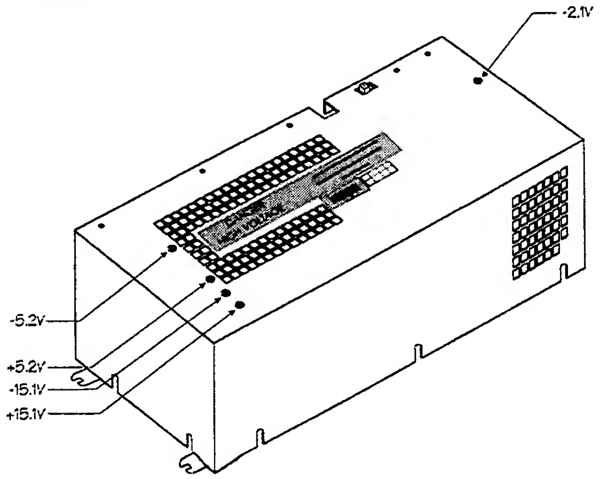
6.5.1 Power Supply Calibration Procedure

- Remove the upper cover assembly (see 6.2.1.a)
- To ensure adequate main board cooling, it is necessary to control the air flow by installing a **temporary closure plate** which fully encloses the air space behind the monitor.
- Turn on the power, set the scope to **Auto Trigger**, and perform the adjustments to get on processor board connector J11:



Vcc : **- 5.2 VDC** (Min - -5.30 V, Max = -5.10 V)
Vee : **+ 5.2 VDC** (Min - +5.10 V, Max = +5.30 V)
+15 : **- 15.1 VDC** (Min - +5.05 V, Max = +15.15 V)
-15 : **+ 15.1 VDC** (Min - -15.15 V, Max = -15.05 V)
-2 : **- 2.1 VDC** (Min - -2.15 V, Max = -2.05 V)
+3.3 : **+ 3.3 VDC** (Min - +3.25 V, Max = +3.35 V) not adjustable

The five potentiometers are accessible from the top through holes in the 900024 power supply chassis.



- Turn the potentiometer clockwise to increase the voltage or counterclockwise to decrease it. When the adjustment is done, stop the acquisition by depressing the stop trigger push button, and verify that there is no large difference on the + 5.00 V, typically less than 80 mV.

6.5.2 Color Monitor Calibration Procedure

This procedure describes the adjustments for the CD9610 display used in the LC574A series digital storage oscilloscopes.

⚠ For reasons of operator safety, no internal part of the display should be touched directly or accessed with any metallic object. All internal safety warning labels should be observed closely.
Any internal display adjustment should be performed using non-magnetic, insulated adjustment tools.
The display system should be oriented on the test bench so the CRT neck is facing magnetic west.
The tests should be performed well away from sources of magnetic radiation. If in doubt, the screen image should be observed for any change whilst the source of potential magnetic radiation is switched on/off (e.g. PC Monitor). If any change is visible on geometry or other effects, the setup environment is unsuitable.

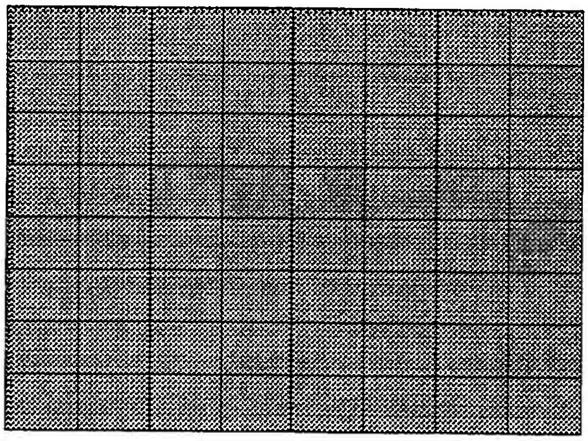
a. Adjustment of Screen Image Position and Size

- Enter the internal menus by pressing menu soft-keys 3 & 4, then release them, then press soft-key 5.

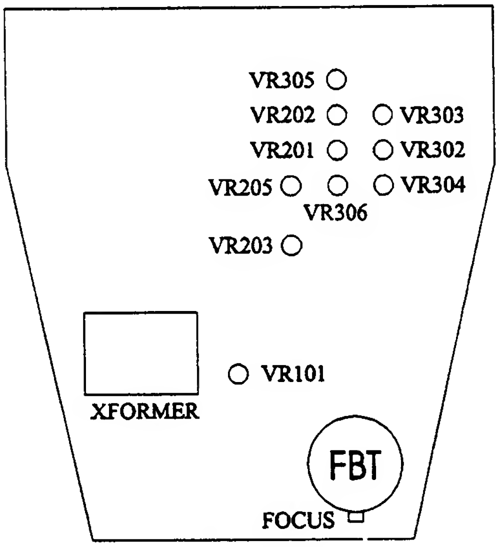
- Select "**Maintenance**", "**Screen Test**", "**Test Images**"

- Select screen test image CD3 by rotating the Time/Div front panel control.

CD96xx Test Grate 3



- Adjust **VPOS** and **VSIZE** controls on the external adjustment board to nominally centre the screen image vertically and obtain a vertical size of 125 mm ± 0.5mm where there is approximately 5mm at the top and bottom between the test image area and the front panel bezel.



Position of Adjustment Potentiometers on Main Circuit Board

Adjustment	Purpose	Comments
VR101	Power Supply Adjust	Do Not Adjust
VR201, 202	Horizontal Phase	Do Not Adjust
VR203	Horizontal Position	Adjustable on external adjustment board
VR205	Horizontal Synchronization	Do Not Adjust
VR302	Vertical Size	Adjustable on external adjustment board
VR303	Trapezium	Adjust if required
VR305	Pin-Cushion	Adjust if required
VR304	Vertical Linearity	Adjust if required
VR306	Horizontal Size	Adjust if required
Focus	Focus	Adjust if required

- Remove the upper cover of display by removing the 9 retaining screws.

- Adjust **HSIZE VR306** control on the main board to obtain a horizontal width of 170mm +3.00mm, -7.00mm.

note: the addition of the CD9610-2 cancellation coil assembly has the effect of reducing the screen width by approximately 4mm.

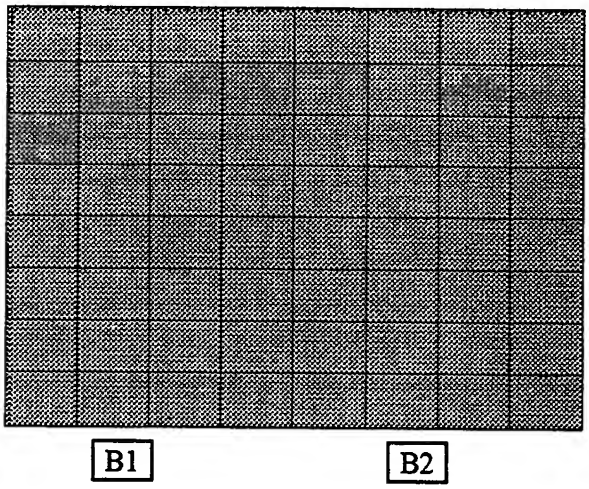
- Adjust **HPOS** control on the external adjustment board to center the screen image horizontally and to obtain a distance at either side of the screen image to the bezel of 2mm.

b. Image Rotation Adjustment Procedure

This procedure is carried out by aligning the CRT within the display chassis.

Note: The rotation of the deflection yoke on the CRT neck should not be attempted as it affects significantly the convergence adjustment of the screen.

CD96xx Test Grate 3



- Loosen the 4 CRT retaining screws, being careful not to damage the protective ground braid.

- Rotate the CRT within the chassis to obtain the optimal alignment of the screen test image reference points B1 and B2 within the bezel.
  distance B1 to bezel - distance B2 to bezel | <= 1.0 mm

- The 4 CRT mounting lugs should not be allowed to protrude outside the overall CRT chassis sides and bottom or above the CRT chassis top cover.

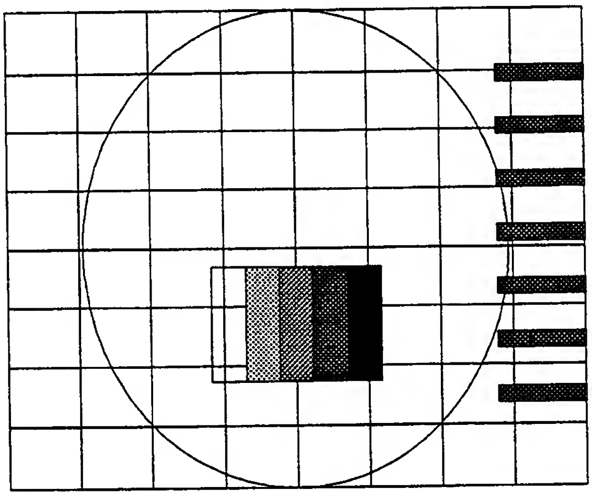
- Tighten the 4 CRT retaining screws.

c. Vertical Linearity

- Select screen test image **CD4** (Magenta Grid on black background) by rotating the Time/Div front panel control.

- Adjust the **VPOS** and **VSIZE** controls to optimize the screen vertical size and position such that the best alignment is obtained of the soft-key menu markings on the bezel and the gray menu control markings on the screen of test image CD4.

CD96xx Test Grate 4



- Verify that the menu markings (each of the 7) on the bezel are aligned horizontally within +- 1.0 mm with the corresponding markings on the screen test image.

d. Control of Screen Image Quality

- Adjust the **Brightness** control on the external adjustment board until the gray-scale test bars on test image CD4 are evenly balanced in color graduation from White to Black. The Black bar (right hand side) should be easily distinguishable from the adjacent bar of dark gray.

- Adjust the **Contrast** on the external adjustment board and **Focus** on the main board until the image is of good quality.

- Verify that there is no jitter of the grid lines (X or Y), the background color is gray and is uniform:
    - No Black holes
    - No color (rainbow) variation
    - No Moiré fringe (wavy lines) visible within the gray background

e. Trapezium & Pin Cushion Adjustment Procedure

- Select screen test image CD3 by rotating the Time/Div front panel control
- Adjust the Trapezium / Pin-Cushion effect using Potentiometers **VR305** and **VR303** (toward the front left of the bottom PCB within the display assembly) until the minimum distortion is achieved.

6.6 Troubleshooting and Flow Charts

6.6.1 Introduction

⚠ The troubleshooting information contained in this section is intended for use by qualified personnel having a basic understanding of electronics (analog and digital). In order to simplify servicing and minimize downtime, the following list of possible symptoms, likely causes, and troubleshooting steps have been prepared.
The first step in troubleshooting is to check for obvious items like blown fuses. The power supply is the next item to check before proceeding to more detailed troubleshooting, since noise or low power supply voltages can cause a variety of digital and analog problems.

6.6.2 Line Fuses Replacement

The power supply of the oscilloscope is protected against short circuits and overload by means of two T6.3A / 250 V fuses located above the main plugs.

⚠ Turn off the power and disconnect the line cord from the instrument Disconnect the instrument from other equipment.

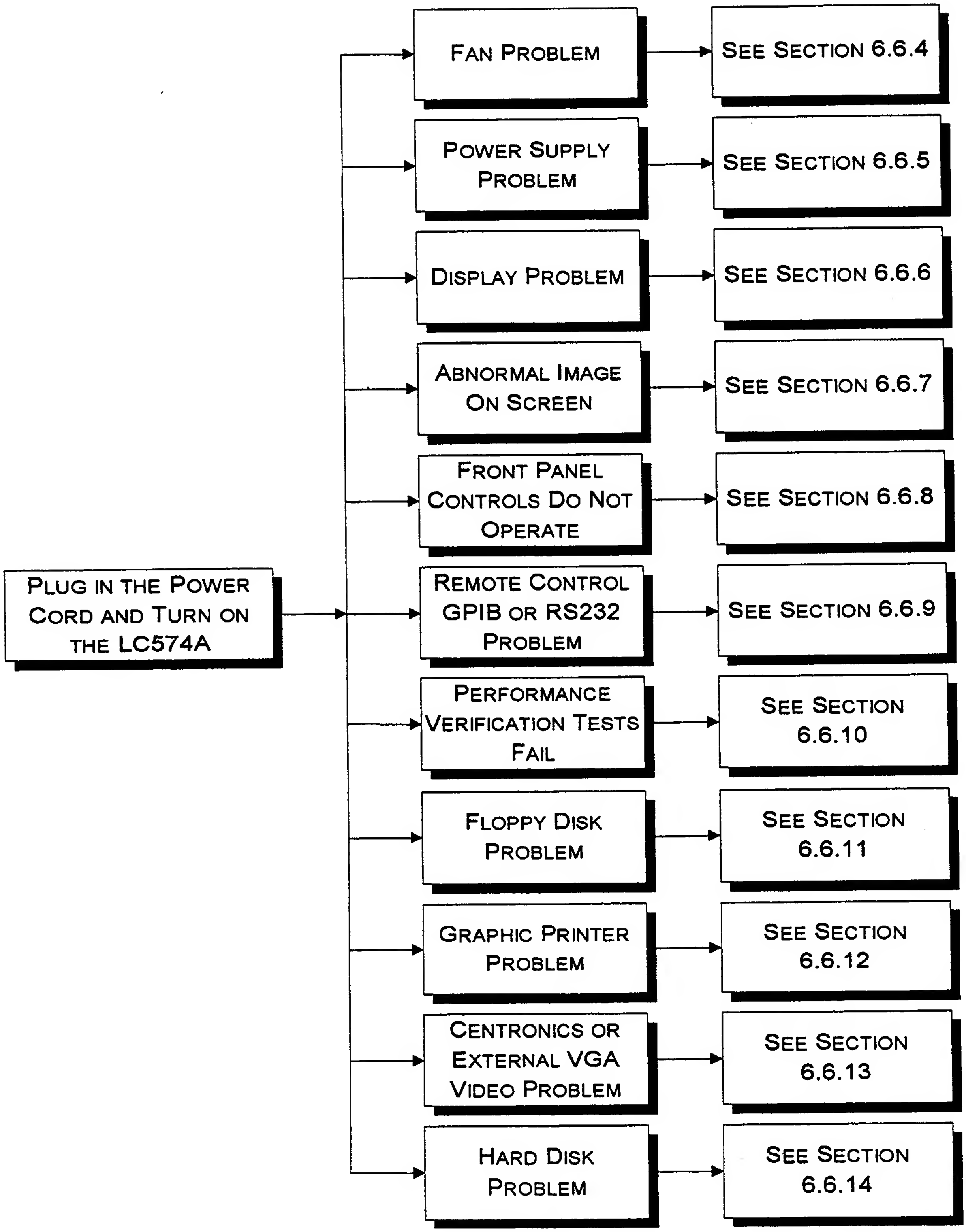
To replace line fuses, proceed as follow :

- Open the fuse box by inserting a small flat screwdriver under the plastic cover and remove the fuse carrier from the holder
- Remove the fuse and replace it with the proper type: T6.3 A / 250 V, LeCroy part number: **433 162 630**

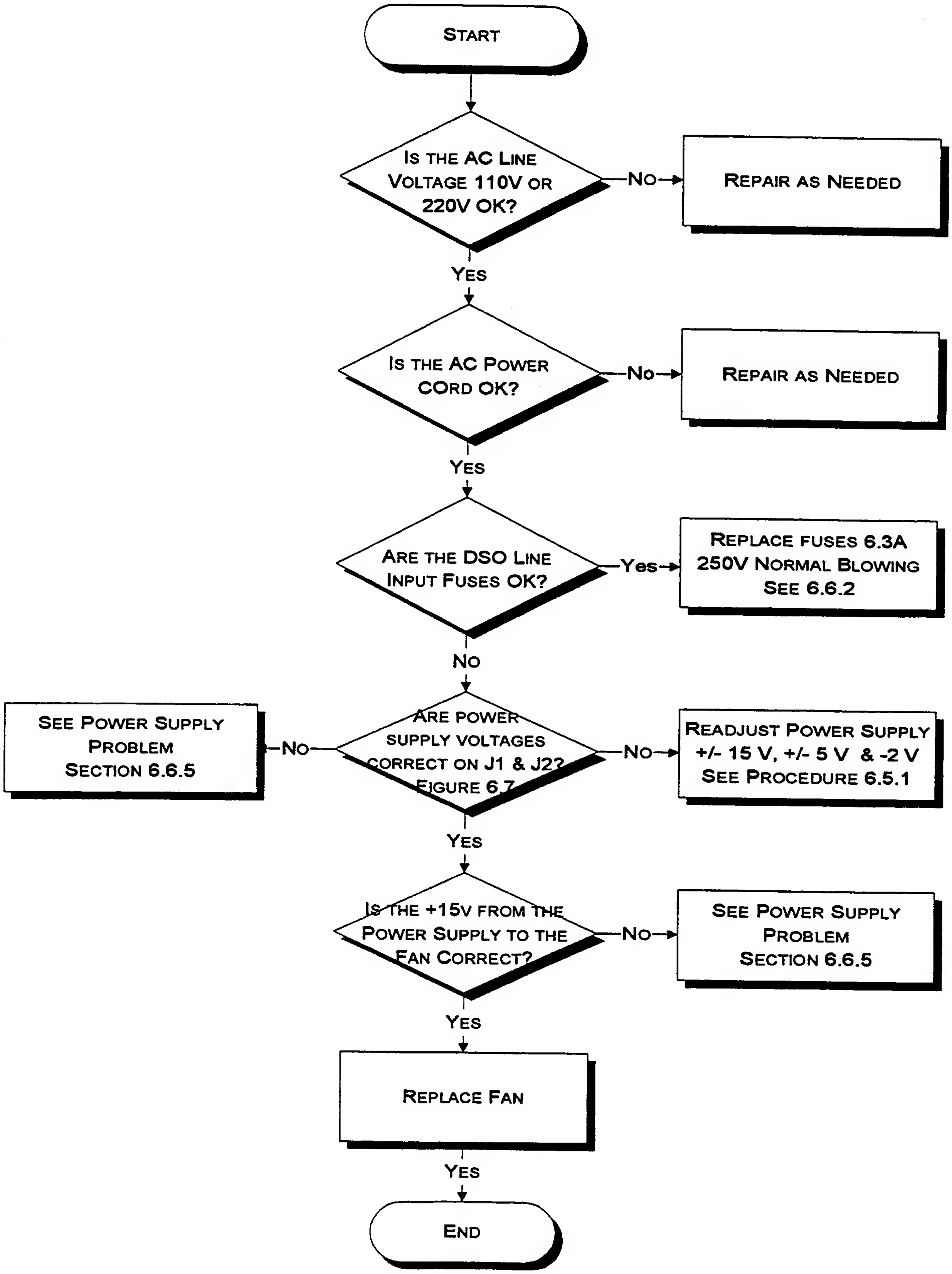
6.6.3 Initial Troubleshooting Chart

Most procedures in this section will allow troubleshooting down to the <u>BOARD LEVEL.</u>

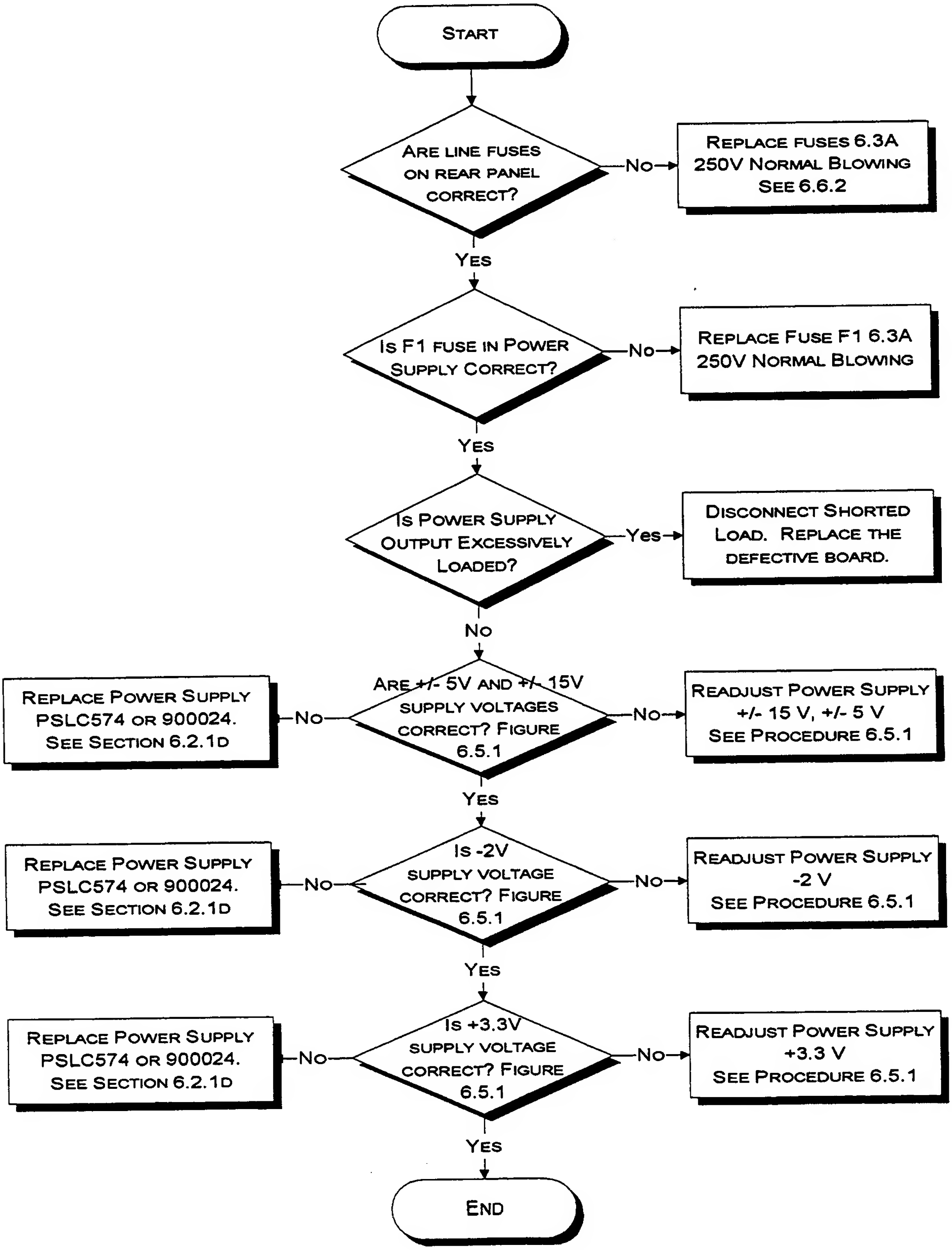
Defective circuit boards will be repaired or exchanged by the regional LeCroy service office or the local representative (see section 2.2).


Plug in the Power Cord and Turn on the LC574A
Fan Problem
See Section 6.6.4
Power Supply Problem
See Section 6.6.5
Display Problem
See Section 6.6.6
Abnormal Image On Screen
See Section 6.6.7
Front Panel Controls Do Not Operate
See Section 6.6.8
Remote Control GPIB or RS232 Problem
See Section 6.6.9
Performance Verification Tests Fail
See Section 6.6.10
Floppy Disk Problem
See Section 6.6.11
Graphic Printer Problem
See Section 6.6.12
Centronics or External VGA Video Problem
See Section 6.6.13
Hard Disk Problem
See Section 6.6.14

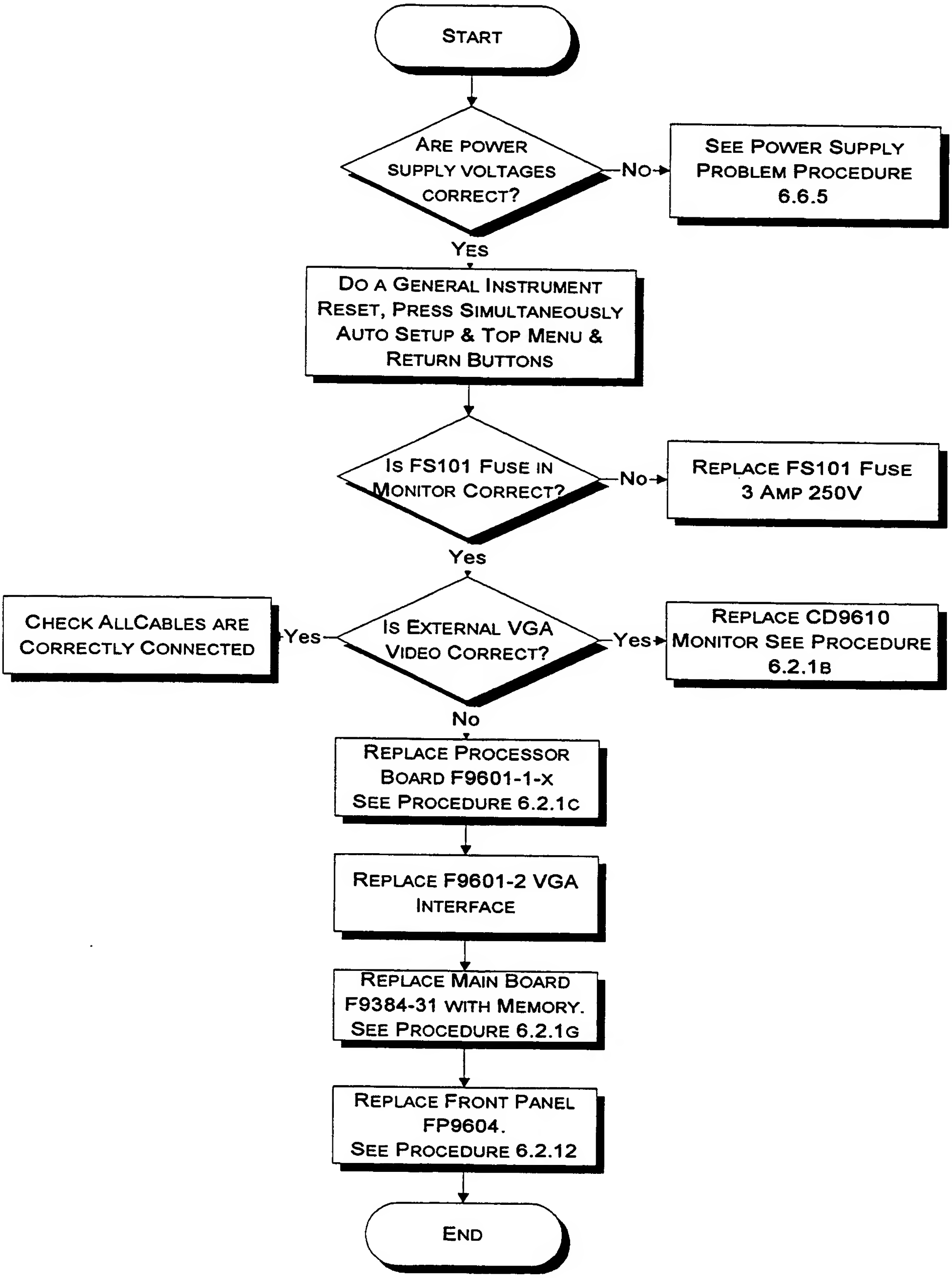
6.6.4 Fan Problem


START
IS THE AC LINE VOLTAGE 110V OR 220V OK?
NO
REPAIR AS NEEDED
YES
IS THE AC POWER CORD OK?
NO
REPAIR AS NEEDED
YES
ARE THE DSO LINE INPUT FUSES OK?
Yes
REPLACE FUSES 6.3A 250V NORMAL BLOWING SEE 6.6.2
NO
SEE POWER SUPPLY PROBLEM SECTION 6.6.5
NO
ARE POWER SUPPLY VOLTAGES CORRECT ON J1 & J2? FIGURE 6.7
NO
READJUST POWER SUPPLY +/- 15 V, +/- 5 V & -2 V SEE PROCEDURE 6.5.1
YES
IS THE +15V FROM THE POWER SUPPLY TO THE FAN CORRECT?
NO
SEE POWER SUPPLY PROBLEM SECTION 6.6.5
YES
REPLACE FAN
YES
END

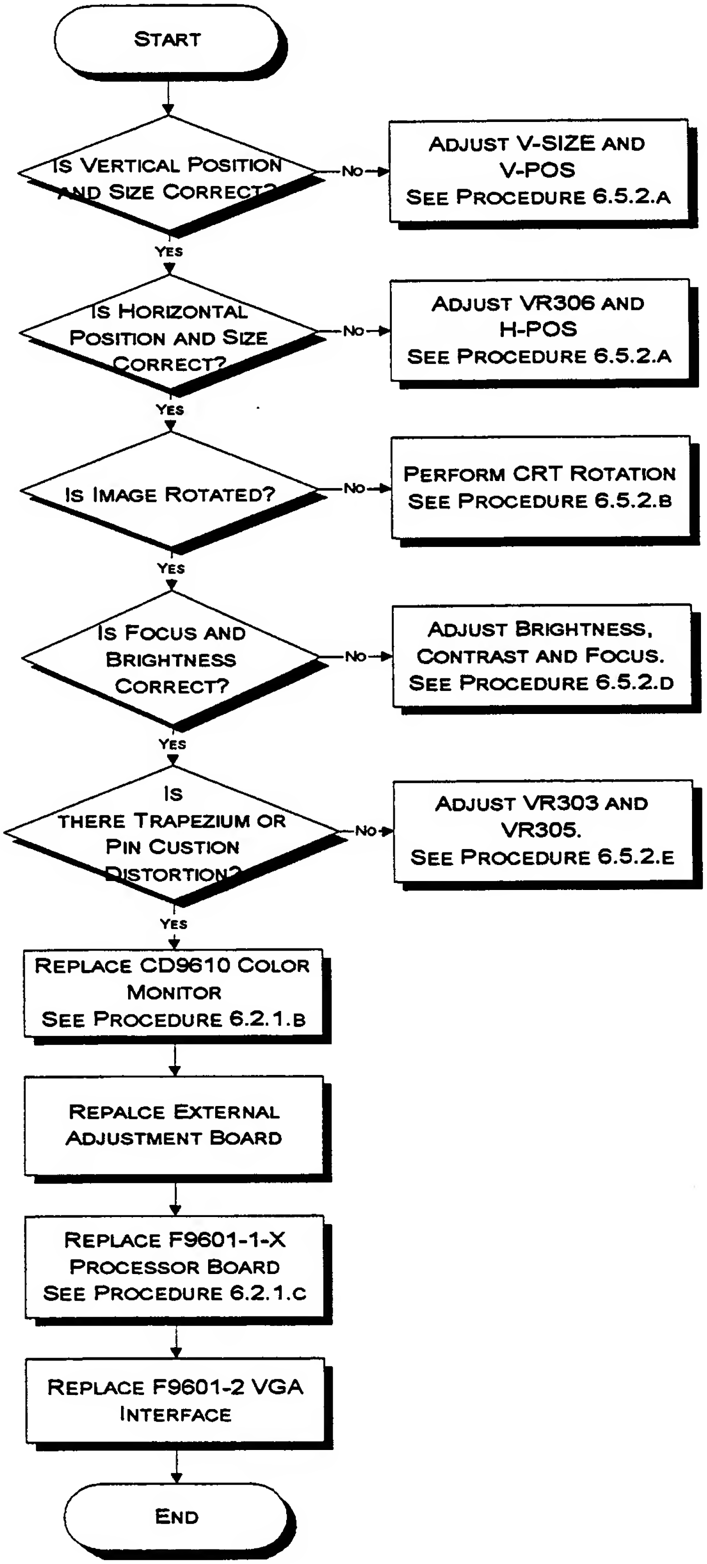
6.6.5 Power Supply Voltages Problem


Start
Are line fuses on rear panel correct?
No
Replace fuses 6.3A 250V Normal Blowing See 6.6.2
Yes
Is F1 fuse in Power Supply Correct?
No
Replace Fuse F1 6.3A 250V Normal Blowing
Yes
Is Power Supply Output Excessively Loaded?
Yes
Disconnect Shorted Load. Replace the defective board.
No
Are +/- 5V and +/- 15V supply voltages correct? Figure 6.5.1
No
Replace Power Supply PSLC574 or 900024. See Section 6.2.1d
No
Readjust Power Supply +/- 15 V, +/- 5 V See Procedure 6.5.1
Yes
Is -2V supply voltage correct? Figure 6.5.1
No
Replace Power Supply PSLC574 or 900024. See Section 6.2.1d
No
Readjust Power Supply -2 V See Procedure 6.5.1
Yes
Is +3.3V supply voltage correct? Figure 6.5.1
No
Replace Power Supply PSLC574 or 900024. See Section 6.2.1d
No
Readjust Power Supply +3.3 V See Procedure 6.5.1
Yes
End

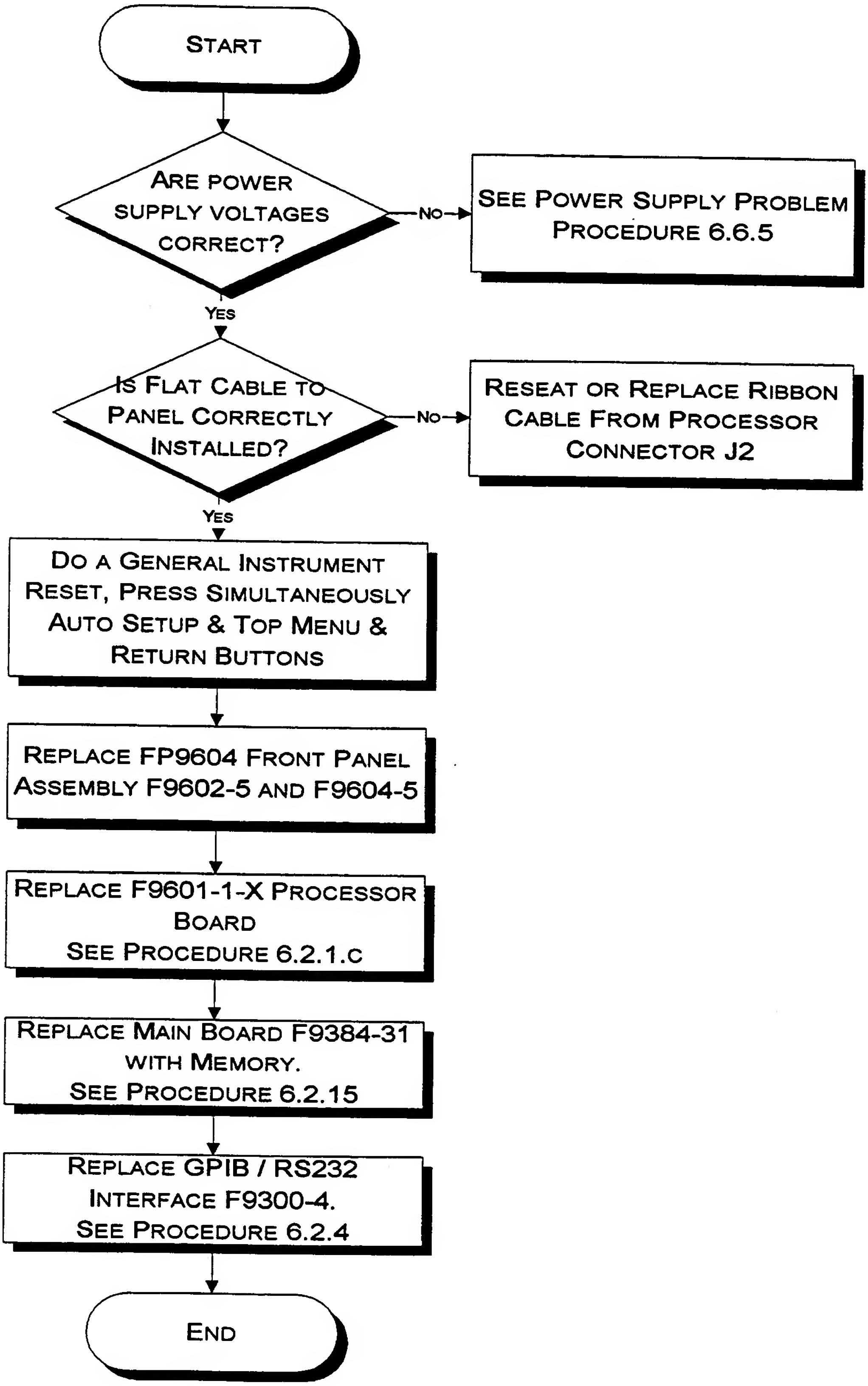
6.6.6 Display Problem


START
ARE POWER SUPPLY VOLTAGES CORRECT?
No
SEE POWER SUPPLY PROBLEM PROCEDURE 6.6.5
YES
DO A GENERAL INSTRUMENT RESET, PRESS SIMULTANEOUSLY AUTO SETUP & TOP MENU & RETURN BUTTONS
IS FS101 FUSE IN MONITOR CORRECT?
No
REPLACE FS101 FUSE 3 AMP 250V
Yes
CHECK ALLCABLES ARE CORRECTLY CONNECTED
Yes
IS EXTERNAL VGA VIDEO CORRECT?
Yes
REPLACE CD9610 MONITOR SEE PROCEDURE 6.2.1B
No
REPLACE PROCESSOR BOARD F9601-1-X SEE PROCEDURE 6.2.1C
REPLACE F9601-2 VGA INTERFACE
REPLACE MAIN BOARD F9384-31 WITH MEMORY. SEE PROCEDURE 6.2.1G
REPLACE FRONT PANEL FP9604. SEE PROCEDURE 6.2.12
END

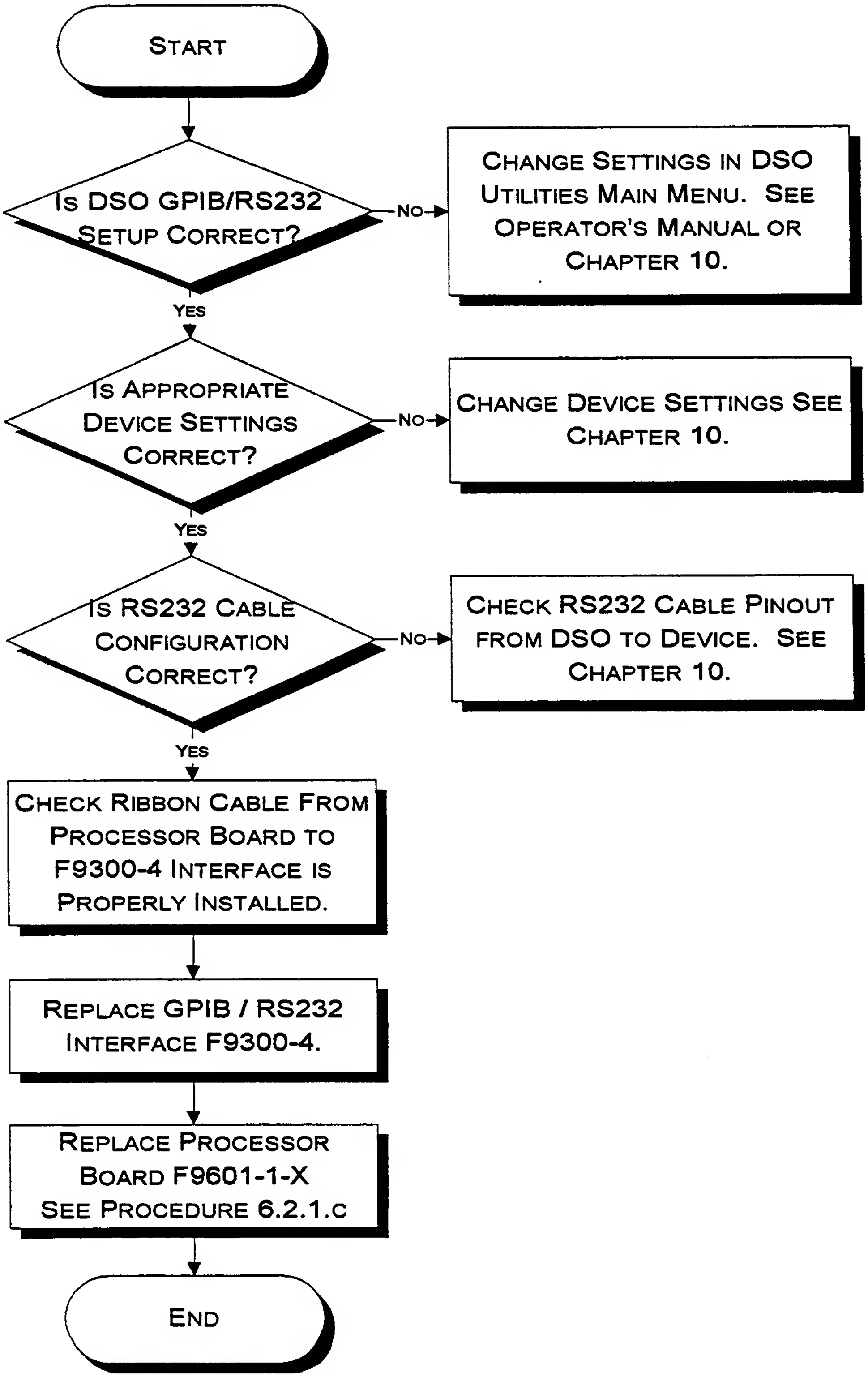
6.6.7 Abnormal Image On Screen


Start
Is Vertical Position and Size Correct?
No
Adjust V-SIZE and V-POS See Procedure 6.5.2.a
Yes
Is Horizontal Position and Size Correct?
No
Adjust VR306 and H-POS See Procedure 6.5.2.a
Yes
Is Image Rotated?
No
Perform CRT Rotation See Procedure 6.5.2.b
Yes
Is Focus and Brightness Correct?
No
Adjust Brightness, Contrast and Focus. See Procedure 6.5.2.d
Yes
Is there Trapezium or Pin Custion Distortion?
No
Adjust VR303 and VR305. See Procedure 6.5.2.e
Yes
Replace CD9610 Color Monitor See Procedure 6.2.1.b
Repalce External Adjustment Board
Replace F9601-1-X Processor Board See Procedure 6.2.1.c
Replace F9601-2 VGA Interface
End

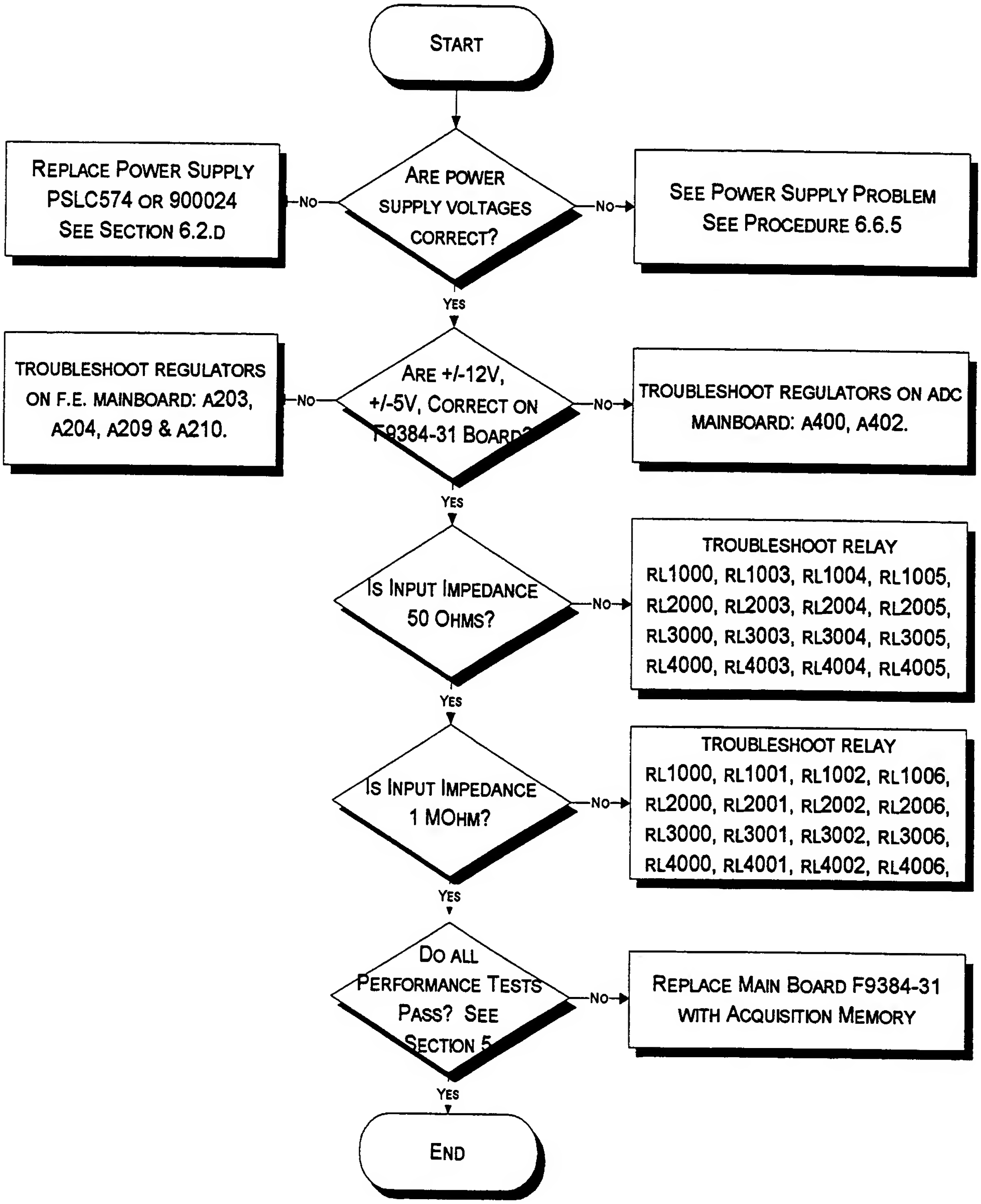
6.6.8 Front Panel Controls Do not Operate


START
ARE POWER SUPPLY VOLTAGES CORRECT?
NO
SEE POWER SUPPLY PROBLEM PROCEDURE 6.6.5
YES
IS FLAT CABLE TO PANEL CORRECTLY INSTALLED?
NO
RESEAT OR REPLACE RIBBON CABLE FROM PROCESSOR CONNECTOR J2
YES
DO A GENERAL INSTRUMENT RESET, PRESS SIMULTANEOUSLY AUTO SETUP & TOP MENU & RETURN BUTTONS
REPLACE FP9604 FRONT PANEL ASSEMBLY F9602-5 AND F9604-5
REPLACE F9601-1-X PROCESSOR BOARD SEE PROCEDURE 6.2.1.C
REPLACE MAIN BOARD F9384-31 WITH MEMORY. SEE PROCEDURE 6.2.15
REPLACE GPIB / RS232 INTERFACE F9300-4. SEE PROCEDURE 6.2.4
END

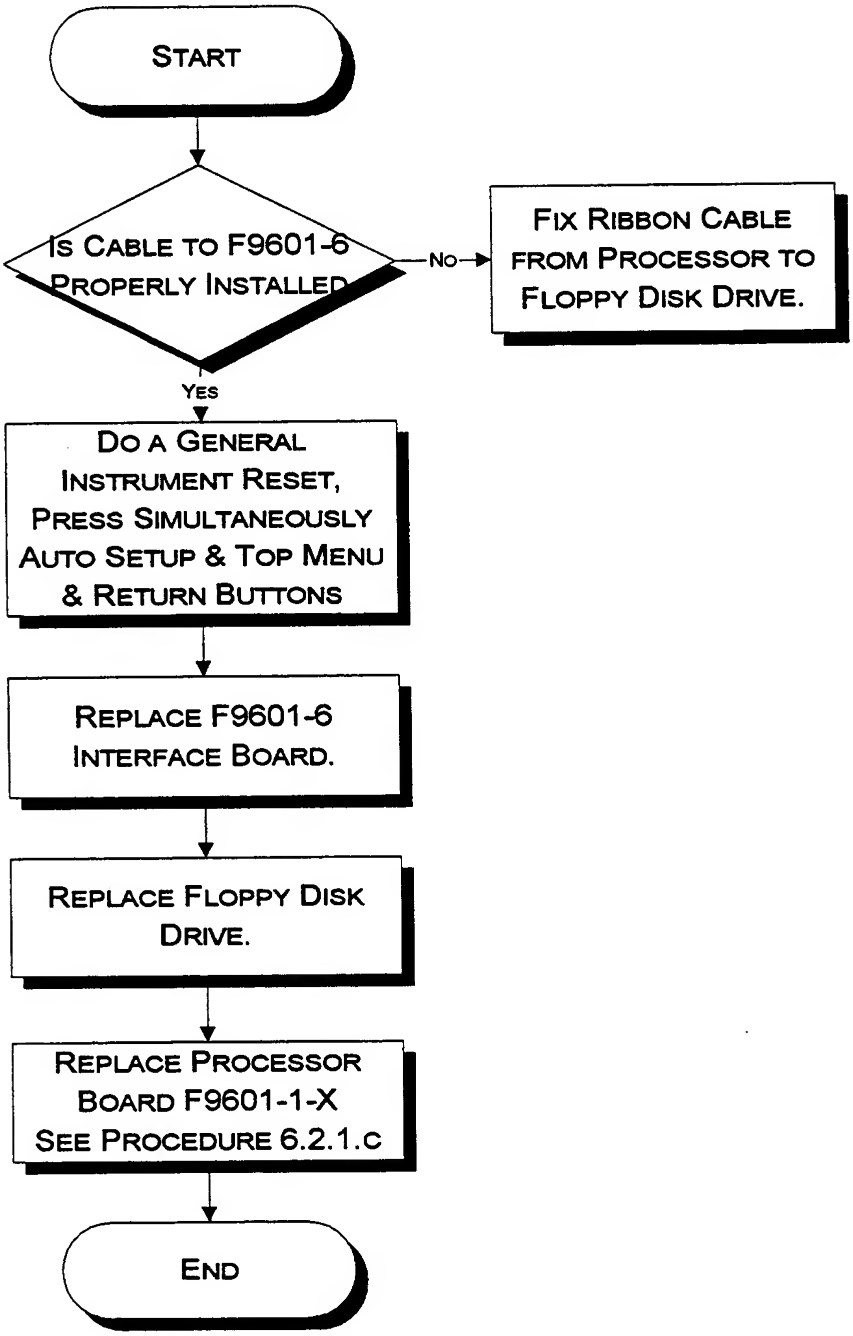
6.6.9 Remote Control GPIB or RS232 Problem


START
Is DSO GPIB/RS232 SETUP CORRECT?
NO
CHANGE SETTINGS IN DSO UTILITIES MAIN MENU. SEE OPERATOR'S MANUAL OR CHAPTER 10.
YES
IS APPROPRIATE DEVICE SETTINGS CORRECT?
NO
CHANGE DEVICE SETTINGS SEE CHAPTER 10.
YES
IS RS232 CABLE CONFIGURATION CORRECT?
NO
CHECK RS232 CABLE PINOUT FROM DSO TO DEVICE. SEE CHAPTER 10.
YES
CHECK RIBBON CABLE FROM PROCESSOR BOARD TO F9300-4 INTERFACE IS PROPERLY INSTALLED.
REPLACE GPIB / RS232 INTERFACE F9300-4.
REPLACE PROCESSOR BOARD F9601-1-X SEE PROCEDURE 6.2.1.C
END

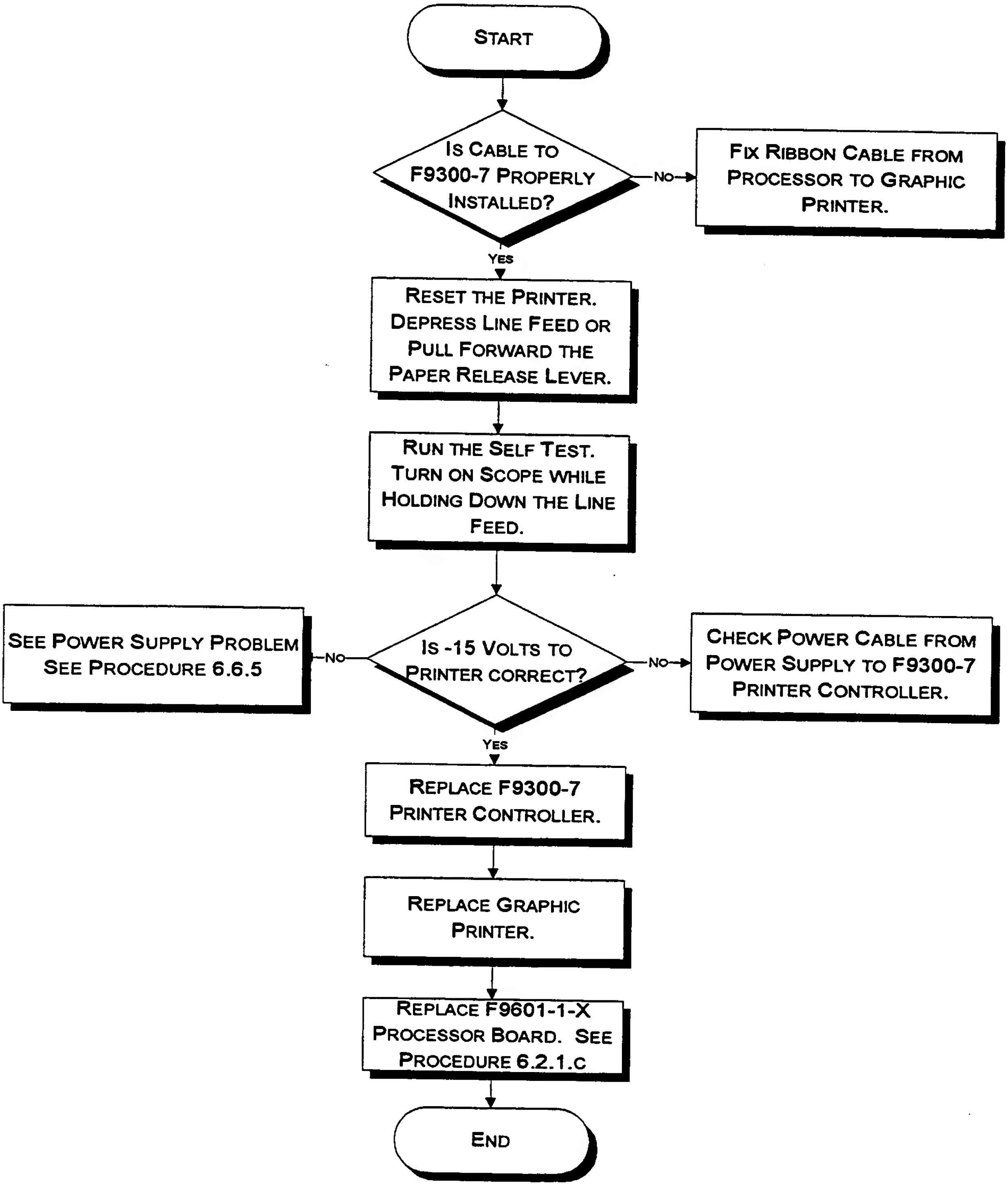
6.6.10 Performance Verification Fails


Start
Are power supply voltages correct?
No
Replace Power Supply PSLC574 or 900024 See Section 6.2.d
No
See Power Supply Problem See Procedure 6.6.5
Yes
Are +/-12V, +/-5V, Correct on F9384-31 Board?
No
TROUBLESHOOT REGULATORS ON F.E. MAINBOARD: A203, A204, A209 & A210.
No
TROUBLESHOOT REGULATORS ON ADC MAINBOARD: A400, A402.
Yes
Is Input Impedance 50 Ohms?
No
TROUBLESHOOT RELAY RL1000, RL1003, RL1004, RL1005, RL2000, RL2003, RL2004, RL2005, RL3000, RL3003, RL3004, RL3005, RL4000, RL4003, RL4004, RL4005,
Yes
Is Input Impedance 1 MOhm?
No
TROUBLESHOOT RELAY RL1000, RL1001, RL1002, RL1006, RL2000, RL2001, RL2002, RL2006, RL3000, RL3001, RL3002, RL3006, RL4000, RL4001, RL4002, RL4006,
Yes
Do all Performance Tests Pass? See Section 5.
No
Replace Main Board F9384-31 with Acquisition Memory
Yes
End

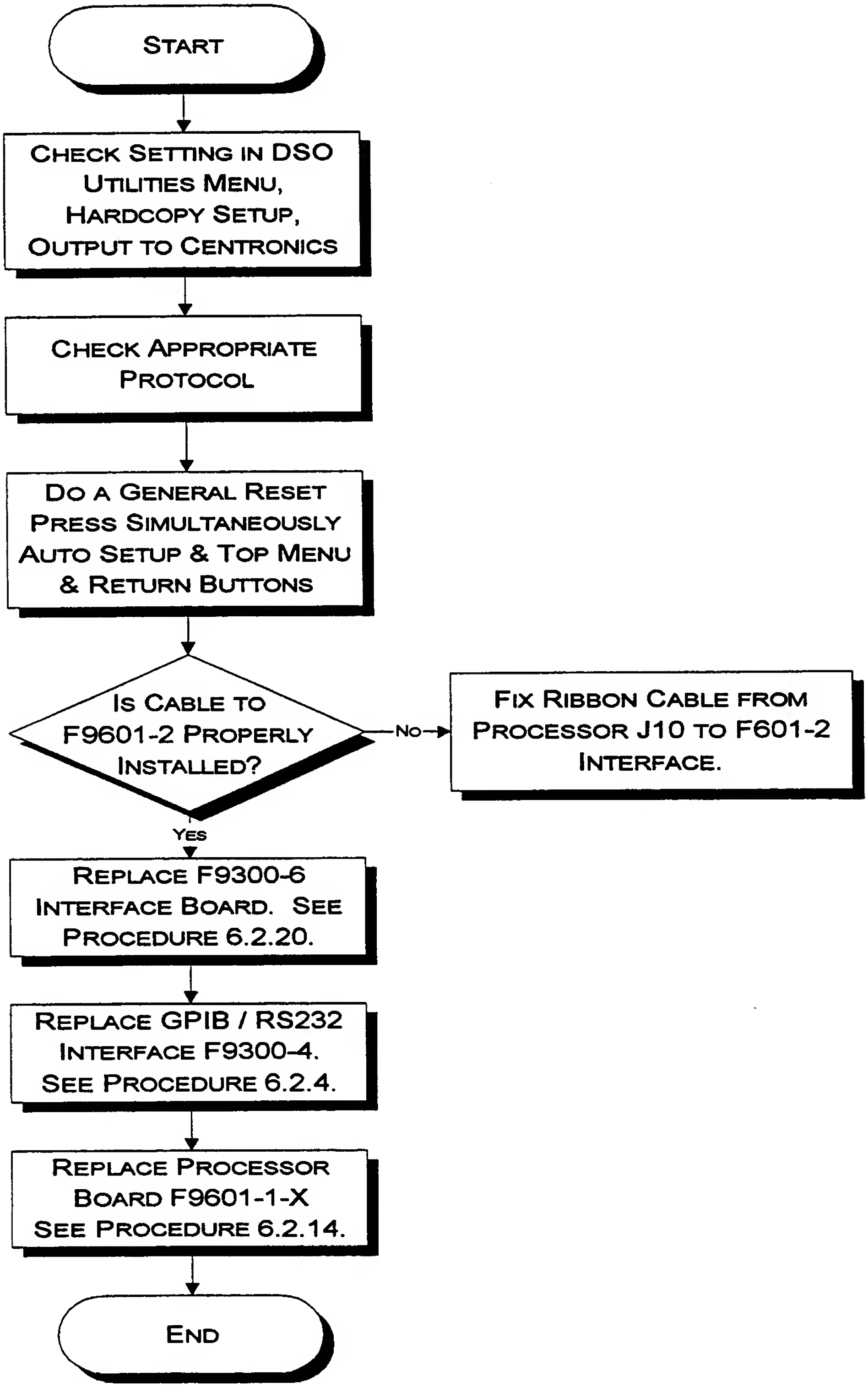
6.6.11 Floppy Disk Drive Problem


START
IS CABLE TO F9601-6 PROPERLY INSTALLED
NO
FIX RIBBON CABLE FROM PROCESSOR TO FLOPPY DISK DRIVE.
YES
DO A GENERAL INSTRUMENT RESET, PRESS SIMULTANEOUSLY AUTO SETUP & TOP MENU & RETURN BUTTONS
REPLACE F9601-6 INTERFACE BOARD.
REPLACE FLOPPY DISK DRIVE.
REPLACE PROCESSOR BOARD F9601-1-X SEE PROCEDURE 6.2.1.C
END

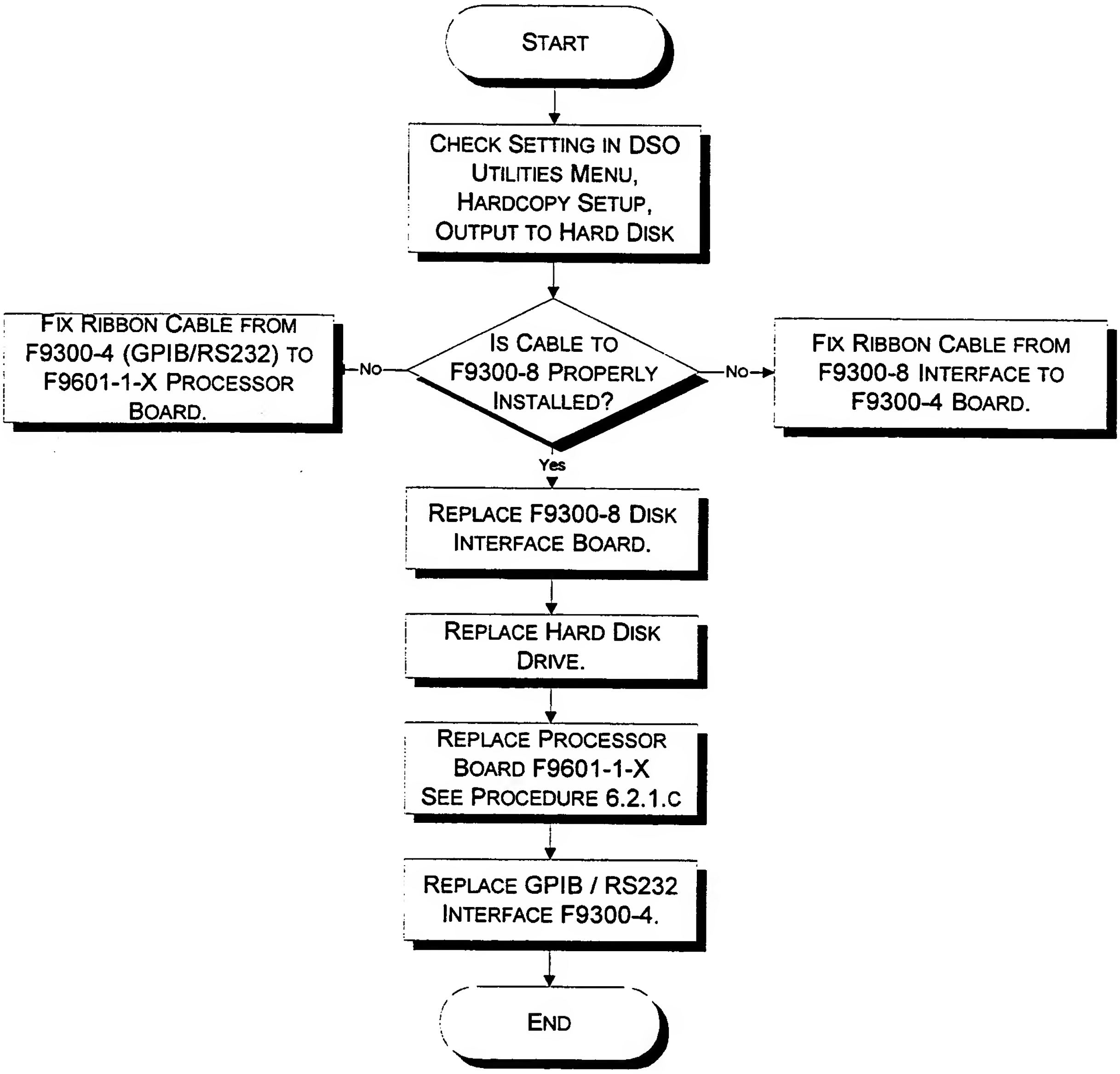
6.6.12 Graphic Printer Problem


START
Is Cable to F9300-7 Properly Installed?
No
Fix Ribbon Cable from Processor to Graphic Printer.
Yes
Reset the Printer. Depress Line Feed or Pull Forward the Paper Release Lever.
Run the Self Test. Turn on Scope while Holding Down the Line Feed.
Is -15 Volts to Printer correct?
No
See Power Supply Problem See Procedure 6.6.5
No
Check Power Cable from Power Supply to F9300-7 Printer Controller.
Yes
Replace F9300-7 Printer Controller.
Replace Graphic Printer.
Replace F9601-1-X Processor Board. See Procedure 6.2.1.c
END

6.6.13 Centronics Problem


START
CHECK SETTING IN DSO UTILITIES MENU, HARDCOPY SETUP, OUTPUT TO CENTRONICS
CHECK APPROPRIATE PROTOCOL
DO A GENERAL RESET PRESS SIMULTANEOUSLY AUTO SETUP & TOP MENU & RETURN BUTTONS
IS CABLE TO F9601-2 PROPERLY INSTALLED?
NO
FIX RIBBON CABLE FROM PROCESSOR J10 TO F601-2 INTERFACE.
YES
REPLACE F9300-6 INTERFACE BOARD. SEE PROCEDURE 6.2.20.
REPLACE GPIB / RS232 INTERFACE F9300-4. SEE PROCEDURE 6.2.4.
REPLACE PROCESSOR BOARD F9601-1-X SEE PROCEDURE 6.2.14.
END

6.6.14 Hard Disk Drive Problem


START
CHECK SETTING IN DSO UTILITIES MENU, HARDCOPY SETUP, OUTPUT TO HARD DISK
IS CABLE TO F9300-8 PROPERLY INSTALLED?
No
FIX RIBBON CABLE FROM F9300-4 (GPIB/RS232) TO F9601-1-X PROCESSOR BOARD.
No
FIX RIBBON CABLE FROM F9300-8 INTERFACE TO F9300-4 BOARD.
Yes
REPLACE F9300-8 DISK INTERFACE BOARD.
REPLACE HARD DISK DRIVE.
REPLACE PROCESSOR BOARD F9601-1-X SEE PROCEDURE 6.2.1.C
REPLACE GPIB / RS232 INTERFACE F9300-4.
END

7. Replaceable Parts

To order parts, contact your local LeCroy service office. A list of the service centers is given in section 2 of this manual. For boards, you can either order a new board or an exchange board. Exchange assemblies are factory repaired, inspected, tested and calibrated. If you order an exchange card, you must return the defective part.

This section applies to the following model :

LC574A, LC574AM & LC574AL

Lecroy Part Number	Description	Rev	Qty
F9601-1-8 for LC574A & AM	Color UP Card & 2X4MB DRAM	E	1
F9601-1-64 for LC574AL	Color UP Card & 2X32MB DRAM	E	1
F9601-2	Centronics & VGA Interface	F	1
9384M-2 for LC574A & AM	Acquisition Memory 2x500K	B	2
9384MEM-2 for LC574AL	Acquisition Memory 2x1M	B	2
F9384-31	Main Card Quad 1000MS/s	D	1
F9300-4	GPIB + RS232 Interface Card	A	1
F9354-4	Time Base Board	E	1
F9601-6	Floppy Disk Drive Assy	D	1
F9300-7	Printer Controller	F	1
F9300-8	Hard Disk Interface	B	1
F9601-8	Main Switch Assembly	A	1
CD9610	Color Display Assy	D	1
FP9604	Front panel Assy 4 channel	K	1
MLC574A	Mechanical parts	C	1
PSLC574 or 900024	Power supply for Color box	B	1
RPLC574	Rear panel assembly	B	1
LCXXX-GP01	Upper cover assembly	B	1
USLC574	Upper shield rod assembly	B	1
ACC-LC574A	Accessories	H	1
205750000	Gate Array 16v8	A	1
705740301	LC574A Front Label	A	1
705704302	LC574AM Front Label	A	1
705740303	LC574AL Front Label	A	1
709600050	9600 Logo LeCroy	A	1
705740017	LC574 Serial Number Plate	A	1
780981015	Flat cable 2x20 (15 cm)	A	1

F9601-1-8 : Processor Card with 2X4MB DRAM

Lecroy Part Number	Description	Rev	Qty
205800130	MODULE DRAM 1MX32 BIT		2
S9601-1	PROCESS. CARD WHOUT DRAM		1

F9601-1-64 : Processor Card with 2X32MB DRAM

Lecroy Part Number	Description	Rev	Qty
205800800	MODULE DRAM 8 MX32 BIT		2
S9601-1	PROCESS. CARD WHOUT DRAM		1

S9601-1 : Processor Card without DRAM

Lecroy Part Number	Description	Rev	Qty
161225103	RES CARBON FILM 10 K		1
161225910	RES CARBON FILM 91 OHMS		2
270170103	TRANSISTOR NPN MPS918		1
290120009	DELAY LINE 9 N-SEC		2
309380016	CRYSTAL OSCILLATOR (PROG) 16 MHZ		1
312590070	BATTERY LITHIUM 3V 70MAH		1
400331020	SOCKET IC SOLD TAIL DIP-20		1
404500068	CONN BD TO BD 68 POS		1
453250072	CONN PC EDGE/SOLD TAIL 72		2
454110026	HDR SOLD TAIL MALE 26 ST		1
454110040	HDR SOLD TAIL/MALE 40/STRAIGHT		2
454110120	HDR SOLD TAIL/MALE 20/STRAIGHT		2
454312010	HDR SOLD TAIL/MALE 10		1
454314016	HDR SOLD TAIL/MALE 16		2
455410096	CONN RT ANGL MALE 96 S-CLIP		1
550010108	SCREW PAN HEAD PHIL M3X8 W/NYLOCK		4
552130101	NUT HEX M3		2
591002130	WIRE TEF BLK SOLID AWG 30		1
595901020	SLEEVING TEFLON AWG 20		1
709450321	HEAT SINK		1
719601103	PC BD PREASS'Y 9601-1		1
CH599045013	THERMALLY CONDUCTIVE ADHESIVE		0
SM200172138	IC 3 TO 8 DECODER 74F138		2
SM200178002	IC 2-INPUT NOR HCT02		1

S9601-1 : Processor Card without DRAM

Lecroy Part Number	Description	Rev	Qty
SM200178004	IC HEX INVERTER HCT04		1
SM200178086	IC 2-IN EXCL-OR HCT86		2
SM200178139	IC 2-TO-4-LINE DECODER HCT139		1
SM200178374	IC D-TYP FLOP 74HCT374		2
SM200276068	IC RTC SERIAL 68HC68T1		1
SM200278390	IC 4-BIT RIPPLE COUNTER 74HCT390		1
SM200344174	IC HEX D-FLOP HCT 174		1
SM205144001	IC 8-MBIT FLASH MEM 28F008SA		2
SM205219257	IC 32K X 8 SCRAM		1
SM205244260	IC 256K X 16 DRAM MCM54260		2
SM205921982	PROGRAMMED GAL DRAMES_Y		1
SM205921983	PROGRAMMED GAL RASADE_Y		1
SM205921984	PROGRAMMED GAL RAMEUR_X		1
SM205921986	PROGRAMMED GAL CARDAN_Z		1
SM205921987	PROGRAMMED GAL GRANDS_Z		1
SM205921988	PROGRAMMED GAL OCCASE_Z		1
SM205921989	PROGRAMMED GAL PROFIL_Z		1
SM205921990	PROGRAMMED GAL SAVEUR_Z		1
SM205921991	PROGRAMMED GAL SEVERE_Z		1
SM205921992	PROGRAMMED GAL VIADUC_Z		1
SM205921993	PROGRAMMED GAL PETITS_Z		1
SM205921996	PROGRAMMED GAL BUDGET_Z		1
SM205921997	PROGRAMMED GAL ASSISE_Z		1
SM205921999	PROGRAMMED GAL RETINE_Z		1
SM207170036	IC HEX BUFFER 3-STATE 74HCT365		3
SM207178541	IC BUFFER/LINE DR HCT541		7
SM207179244	IC BUFFER/LINE DRIV HCT244		1
SM207660150	IC DYNAMIC BUS SIZER MC68150		1
SM207665545	IC FLAT PANEL VGA CONTROLLER		1
SM207878245	IC BUS TRANSCVR HCT245		3
SM207972157	IC DATA SEL/MUX 74F157A		4
SM207978157	IC 2-INPUT MUX HCT157		1
SM208277770	IC DUAL PWR SUPPLY SUPR 7770-5		1
SM208470358	IC DUAL OP AMP LM358D		2
SM208680916	IC LOW SKEW CLOCK DRIVER 88916		1
SM208780109	IC MICROPOWER DC-DC CONV 1109CS8		1
SM227063201	IC IBM/PC FLOPPY DISK CONTROLLER		1

S9601-1 : Processor Card without DRAM

Lecroy Part Number	Description	Rev	Qty
SM227300059	IC INTERRUPT CONTROLLER UPD71059		1
SM227300603	IC RISC PROCESSOR MPC603E		1
SM232032814	DIODE ARRAY 2814		1
SM236030099	DIODE SO-PKG BAV99		3
SM253032823	DIODE SCHOTTKY 2823		1
SM256232013	DIODE LIGHT EMITTING RED		1
SM270130092	TRANSISTOR NPN BFR92A		1
SM270330848	TRANSISTOR NPN BC848C		1
SM275330858	TRANSISTOR PNP BC858C		1
SM280171005	TRANSISTOR POWER MOSFET MTD10N05E		2
SM300056332	INDUCTOR WOUND 33 UH		1
SM300327102	INDUCTOR WOUND 1 UH		1
SM301502001	BEAD (FERRITE CHIP)		3
SM310300406	CRYSTAL 32768 HZ		1
SM310900024	CRYSTAL 24 MHZ SMD		1
SM653101201	RES CHIP 1% 10.0 OHMS		4
SM653101218	RES CHIP 1% 15.0 OHMS		1
SM653101234	RES CHIP 1% 22.1 OHMS		28
SM653101266	RES CHIP 1% 47.5 OHMS		7
SM653101269	RES CHIP 1% 51.1 OHMS		9
SM653101289	RES CHIP 1% 82.5 OHMS		3
SM653101297	RES CHIP 1% 100 OHMS		10
SM653101314	RES CHIP 1% 150 OHMS		5
SM653101330	RES CHIP 1% 221 OHMS		1
SM653101334	RES CHIP 1% 243 OHMS		2
SM653101347	RES CHIP 1% 332 OHMS		1
SM653101362	RES CHIP 1% 475 OHMS		1
SM653101365	RES CHIP 1% 511 OHMS		10
SM653101393	RES CHIP 1% 1.00 K		53
SM653101401	RES CHIP 1% 1.21 K		2
SM653101410	RES CHIP 1% 1.50 K		3
SM653101426	RES CHIP 1% 2.21K		1
SM653101430	RES CHIP 1% 2.43 K		1
SM653101450	RES CHIP 1% 3.92 K		1
SM653101458	RES CHIP 1% 4.75 K		33
SM653101477	RES CHIP 1% 7.50 K		1
SM653101489	RES CHIP 1% 10.0 K		43
SM653101506	RES CHIP 1% 15.0 K		2
SM653101554	RES CHIP 1% 47.5 K		1
SM653101585	RES CHIP 1% 100 K		3
SM653101602	RES CHIP 1% 150 K		1

S9601-1 : Processor Card without DRAM

Lecroy Part Number	Description	Rev	Qty
SM653101635	RES CHIP 1% 332 K		2
SM653101650	RES CHIP 1% 475 K		1
SM653101777	RES CHIP 1% 10.0 M		2
SM654101000	CHIP JUMPER ZERO OHMS		14
SM661207102	CAP CERA CHIP 20% .001 UF		1
SM661207103	CAP CERA CHIP 20% .01 UF		102
SM661207104	CAP CERA CHIP 20% .1 UF		5
SM661255100	CAP CERA CHIP 5% 10 PF		2
SM661255101	CAP CERA CHIP 5% 100 PF		4
SM661255180	CAP CERA CHIP 5% 18 PF		2
SM661255221	CAP CERA CHIP 5% 220 PF		2
SM666217106	CAP MOLD TANT CHIP 10 UF		2
SM666237476	CAP MOLD TANT CHIP 47 UF		1
SM666257336	CAP MOLD TANT CHIP 33 UF		9
SM666327225	CAP MOLD TANT CHIP 2.2 UF		1

9384M-2: Acquisition Memory 2 X 500 K

Lecroy Part Number	Description	Rev	Qty
454110024	HDR 2MM PRESSFIT TO MALE 24		9
719384202	PC BD PREASS'Y 9384L-2	1002	1
SM200170032	IC 2-IN OR GATE 74F32		1
SM200470573	IC 3.3V D-TYPE LATCH		2
SM205211001	IC 32K X 36 SYNC SRAM		16
SM653101339	RES CHIP 1% 274 OHMS		2
SM654101000	CHIP JUMPER ZERO OHMS		9
SM661207104	CAP CERA CHIP 20% .1 UF		51
SM666267227	CAP TANT 220UF 10V 20%		31

9384MEM-2 : Acquisition Memory 2 X 2 M

Lecroy Part Number	Description	Rev	Qty
454110024	HDR 2MM PRESSFIT TO MALE 24		9
719384202	PC BD PREASS'Y 9384L-2	1002	1
SM200170032	IC 2-IN OR GATE 74F32		1
SM200470573	IC 3.3V D-TYPE LATCH		2
SM205211002	IC 64K X 32 SYNC SRAM		16
SM653101339	RES CHIP 1% 274 OHMS		2
SM654101000	CHIP JUMPER ZERO OHMS		9
SM661207104	CAP CERA CHIP 20% .1 UF		51
SM666267227	CAP TANT 220UF 10V 20%		31

F9601-2 : Centronics & VGA Interface

Lecroy Part Number	Description	Rev	Qty
405204000	JACKSCREW 3/16 HEX M/F 4-40THD		6
454110040	HDR SOLD TAIL/MALE 40/STRAIGHT		1
454520025	CONN RT ANGLE FEM 25 S-CLIP		1
454630015	CONN FEM SUBMINIATURE D-15		2
550010706	SCREW ECO-FIX PHIL PAN M3X6 W/NYLOC		2
709601211	9601-2 BRACKET	B	1
719601203	PC BD PREASS'Y 9601-2	B	1
SM253032823	DIODE SCHOTTKY 2823		4
SM270330848	TRANSISTOR NPN BC848C		3
SM301502001	BEAD (FERRITE CHIP)		6
SM653101269	RES CHIP 1% 51.1 OHMS		5
SM653101285	RES CHIP 1% 75.0 OHMS		3
SM653101393	RES CHIP 1% 1.00 K		3
SM653101439	RES CHIP 1% 3.01 K		6
SM653101522	RES CHIP 1% 22.1 K		2
SM661207104	CAP CERA CHIP 20% .1 UF		1
SM661255470	CAP CERA CHIP 5% 47 PF		19
SM661255471	CAP CERA CHIP 5% 470 PF		2

F9384-31 : Main Acquisition Board

Lecroy Part Number	Description	Rev	Qty
900022-01	4 CHANNEL 1 GS/S MAIN BOARD		1

FPLC574-3 : Main Card Panel

Lecroy Part Number	Description	Rev	Qty
FPLC574-3	MAIN CARD FRNT PANEL LC574XX (PEMS)		1

900022-01 : Main Acquisition Board

Lecroy Part Number	Description	Rev	Qty
146544471	CAP MINI ALUM 20% 470 UF		1
146554476	CAP MINI ALUM 20% 47 UF		2
146574227	CAP MINI ALUM 20% 220 UF		3
146654107	CAP MINI ALUM 20% 100 UF		2
158899003	CAP VARIABLE .5 - 2.5 PF		4
161030000	RES COMP ZERO OHMS		1
161225390	RES CARBON FILM 39 OHMS		1
161225820	RES CARBON FILM 82 OHMS		1
168909001	RES ULTRA PREC 900K 0.25% 500V		10
169416473	RESISTOR DISC NTC 47 K		1
208123002	IC +12 VOLT REG LM340T-12		3
208124003	IC VOLT REG -12V LM320T-12		3
235010005	DIODE RECTIFIER 1N4005		1
290120005	DELAY LINE 5 N-SEC		1
290120009	DELAY LINE 9 N-SEC		1
290199015	DELAY LINE 1.5 NS		2
290199020	DELAY LINE 2.0 NS		1
311210010	CRYSTAL OSCILLATOR 3PPM 10MHZ		1
430430004	RELAY HF 12V MINIATURE		21
430490003	RELAY 2 FORM C DPDT		1
430490005	RELAY 1 FORM C SPDT		8
454111024	HDR 2MM PRESSFIT TO FEMALE 4X6		18
454112024	HDR SOLD TAIL/MAIL 24		1
454117003	FRICTION HEADER STRAIGHT .1 CENTERS		1
454220096	HDR PRESSFIT TO FEM 96		1
454312004	HDR SOLD TAIL/WW 4		4
454312010	HDR SOLD TAIL/MALE 10		1
454313010	HDR DIP SOLD TO PCB 2X5		7
454340002	HDR SOLD TAIL/WW 2		10
454390002	HDR FRICTION LOCK 2-PIN		1
454710002	HDR SOLD TAIL/MALE 2		1
505019968	HEAT SINK VERTICAL MTG		2
505070220	HEATSINK WITH TAG FOR TO-220		2
505112016	HEAT SINK FOR DIP-16		5
505121002	HEATSINK 1.5"X.65", .8" HIGH		2
505121003	HEATSINK, 1.1"X1.0", .8" HIGH		2
505121004	HEATSINK, .9"X1.0", 8" HIGH		1
530040007	BUZZER 85DB 5V SMALL		1
593910001	CABLE CO-AXIAL RG178B/U		5
594220026	MICRO WIRE CLIP, SIDE ENTRY		7

900022-01 : Main Acquisition Board

Lecroy Part Number	Description	Rev	Qty
709354411	9354-4 OSCILLATOR SHIELD		1
709370311	HFE419 HEATSINK		4
709370321	HFE419 HEATSINK CLIP		4
709384013	HEATSINK 24 X 23 X 32H	1001	2
709384014	HEATSINK 42 X 25 X 32H	1000	2
7093XXP01	RIGHT ANGLE RECEPT. CONNECTOR		6
7093XXP21	BULKHEAD RECEPTACLE FEMALE BNC		6
719384301	PC BD PREASSEMBLY 9384-3	1301	1
CH599041022	HEAT SINK COMPOUND 251		0
CH599045013	THERMALLY CONDUCTIVE ADHESIVE		0
F9354-4	400-500MHZ PLL OSCILLATOR	1005	1
F9384-7	T-COIL 9384	1001	4
FP9384-3	MAIN CARD FRONT PANEL 9384-3	1100	1
HAD621	HYBRID 1GS/S DUAL DIFF INPUT ADC	1022	4
HFE624	HYBRID FRONT END HFE624	1000	4
MCL404	IC MEM GATE ARRAY MCL404		1
MDX622	IC 2:8 ECL TO TTL DEMULTIPLEXER		4
MST412	IC SMART TRIGGER GATE ARRAY MST412		1
MTB411	IC TIME BASE GATE ARRAY MTB411		1
MTR408	INTEGRATED TRIGGER		5
SM158240200	CAP VARIABLE .6 - 2.5 PF		10
SM158240201	CAP VARIABLE 1 - 5 PF		1
SM158240203	CAP VARIABLE 5 - 18 PF		8
SM168651297	RES METAL FILM 1% 100 OHM		2
SM168651315	RES METAL FILM 1% 154 OHMS		14
SM168659004	RES METAL FILM .1% 900 OHMS		1
SM168659006	RES METAL FILM .1% 111.1 K		1
SM168659007	RES METAL FILM .1% 3.00K		4
SM168659297	RES METAL FILM .1% 100 OHMS		3
SM185457201	RES VARI CERMET 200 OHMS		5
SM185457203	RES VARI CERMET 20 K		5
SM185457501	RES VARI CERMET 500 OHMS		4
SM185457502	RES VARI CERMET 5 K		1
SM185457503	RES VARI CERMET 50 K		4
SM185657500	RES VARI CERMET 500 OHMS 3MM		12
SM190361222	RES NETWORK 2.2K		1
SM200167102	IC NOR GATE 10H102		2

900022-01 : Main Acquisition Board

Lecroy Part Number	Description	Rev	Qty
SM200167164	IC 8 TO 1 MPLX 10H164		1
SM200169016	IC BINARY UP COUNTER 10E016		3
SM200169191	IC UP-DOWN BIN COUNTER N74F191D		5
SM200170032	IC 2-IN OR GATE 74F32		2
SM200178000	IC 2-INPUT NAND HCT00		1
SM200178002	IC 2-INPUT NOR HCT02		3
SM200178030	IC 8-IN NAND HCT30		1
SM200178074	IC D-TYP FLOP 74HCT74		2
SM200178138	IC 3-TO-8-LINE DECODER HCT138		4
SM200178273	IC D-TYP FLOP 74HCT273		2
SM200178374	IC D-TYP FLOP 74HCT374		1
SM200278040	IC COUNTER HCT4040		1
SM200470573	IC 3.3V D-TYPE LATCH		4
SM201164104	IC QUINT 2-IN AND/NAND 10E104		1
SM201164131	IC M/S D-TYP FLOP 10E131		1
SM201174001	IC ECL 4 IN OR/NOR 10EL01D		3
SM201174005	IC ECL 2-IN DIFF AND/NAND 10EL05D		16
SM201174011	IC ECL 1:2 DIFF CLOCK DRVR 10EL11D		25
SM201174031	IC ECL FLIP FLOP SET/RESET 10EL31D		9
SM201274032	IC ECL DIVIDE BY 2 10EL32D		3
SM201274033	IC ECL DIVIDE BY 4 MC10EL33		1
SM201570016	IC ECL DIFF RECEIVER 10EL16D		2
SM201574058	IC ECL 2:1 MUX 10EL58D		1
SM205045300	PROGRAMMED GAL MIMOSA-A		1
SM205045350	PROGRAMMED GAL ROUTE1-A		1
SM205045351	PROGRAMMED GAL ROUTE2-A		1
SM205045352	PROGRAMMED GAL ROUTE2-B		1
SM205045354	PROGRAMMED GAL AVENUE-A		1
SM205045355	PROGRAMMED GAL RUELLE-A		1
SM205045357	PROGRAMMED GAL CHEMIN-A		1
SM205045358	PROGRAMMED GAL ROUTE 3-C		1
SM205045359	PROGRAMMED GAL ARTERE-B		1
SM205108016	IC EEPROM 16K BIT IIC BUS		2
SM205618165	IC 8-BIT SHIFT REG 74HCT165		1
SM205618594	IC 8-BIT SHIFT REG 74HC594		23
SM205701070	IC 128KX8 STAT RAM 70 NS		4
SM206070584	IC BUS CONTROLLER 8584		1
SM206260858	IC OCT 8-BIT ADC SYSTEM 858		1
SM206884623	IC OCTAL BUS TRANSCVR ABT623		6
SM206885245	IC BUS TRANSCVR ABT245		2

900022-01 : Main Acquisition Board

Lecroy Part Number	Description	Rev	Qty
SM206970457	IC 3 DIFF 2:1 MUX MC10E457		1
SM206980056	IC ECL DUAL DIFF 2:1 MUX MC100EL56		7
SM207130025	TRANSISTOR NPN BFT25A		1
SM207170367	IC HEX BUFFER 74HC367		1
SM207171244	IC OCTAL BUFFER ABT244		4
SM207280703	IC 16-BIT DAC 703		1
SM207288800	IC OCTL 8-BIT CMOS D/A CONV DAC8800		3
SM207360125	IC TRANSLATOR MC10125		3
SM207367124	IC TRANSLATOR 10H124		1
SM207367125	IC TRANSLATOR 10H125		1
SM207770201	IC ANALOG SWITCH DG201		4
SM207770403	IC ANALOG SWITCH DG403		1
SM207770442	IC ANALOG SWITCH DG442		5
SM207960157	IC QUAD 2:1 MULTIPLEXER 10E157		1
SM207970057	IC 4:1 DIFF MUX 10EL57		3
SM207970139	IC DECODER/DEMUX 74F139		3
SM207970351	IC OCTAL ANALOG MUX/DEMUX 74HC4351		1
SM207970508	IC ANALOG MULT PLX 8 TO 1 DG508		1
SM207972157	IC DATA SEL/MUX 74F157A		1
SM207978153	IC 4-INPUT MUX HCT153		1
SM207978251	IC 8-IN MUX 3-ST 74HCT251		2
SM208030245	IC TRANS ARRAY NPNX6 SL3245		1
SM208470037	IC OP AMP 37GS		1
SM208470111	IC HF BUFFER CLC111		4
SM208470324	IC OP AMP LM324M		1
SM208470347	IC J-FET OP AMP 347		12
SM208470351	IC J-FET OP AMP 351		1
SM208470353	IC DUAL OP AMP LF353		3
SM208470705	IC OP AMP PICOAMP INPUT AD705		13
SM208480640	IC WIDEBAND OP AMP OPA640		4
SM208570078	IC LOW POWER REG +12V 78L12		1
SM208570805	IC POS VOLT REG 78L05		2
SM208591336	IC VOLT REF DIODE LM336		2
SM208870339	IC VOLT COMPARATOR 339		6
SM208880079	IC LOW POW REG -12V 79L12		1
SM208880337	IC ADJ VOLT REG LM337		4
SM208971881	IC VIDEO SYNC SEPARATOR LM1881		1
SM229020150	MLC TRANS VOLT SUPPRESSOR		6
SM232022822	DIODE ARRAY SCHOTTKY 2822		2

900022-01 : Main Acquisition Board

Lecroy Part Number	Description	Rev	Qty
SM232120070	DIODE ARRAY BAV70		3
SM236030099	DIODE SO-PKG BAV99		76
SM236654004	DIODE RECTIFIER 4004		2
SM240050033	DIODE ZENER TZM-C-3V3		5
SM240050051	DIODE ZENER TZM-C-5V1		1
SM240218451	DIODE ZENER BZX84C5V1		19
SM240218462	DIODE ZENER BZX84C6V2		4
SM240218475	DIODE ZENER BZX84C7V5		2
SM252023018	DIODE PIN BAT18		5
SM252080682	DIODE PIN BA682		5
SM253032823	DIODE SCHOTTKY 2823		11
SM270030020	TRANSISTOR NPN BFS20		1
SM270130092	TRANSISTOR NPN BFR92A		4
SM270130093	TRANSISTOR NPN BFR93A		3
SM270160520	TRANSISTOR NPN HF BFG520/X		13
SM275030092	TRANSISTOR PNP BFT92		4
SM275030093	TRANSISTOR PNP BFT93		2
SM275030550	TRANSISTOR PNP BF550		6
SM275330858	TRANSISTOR PNP BC858C		10
SM280120416	TRANSISTOR JFET N MMBF4416		5
SM280171005	TRANSISTOR POWER MOSFET MTD10N05E		4
SM289772003	TRANSISTOR ARRAY 2003		4
SM300446150	INDUCTOR 10% .015 UH		1
SM301502001	BEAD (FERRITE CHIP)		36
SM311414318	CRYSTAL OSCILLATOR 14.31818MHZ		1
SM454120025	CONN 1MM FEMALE 25		1
SM651104182	RES CHIP 1% 25PPM 1.8K		1
SM651104183	RES CHIP 1% 25PPM 18 K		1
SM651104204	RES CHIP 1% 25PPM 200 K		1
SM651104241	RES CHIP 1% 25PPM 240 OHM		1
SM651104392	RES CHIP 1% 25PPM 3.9K		5
SM652061024	RES CHIP 1% 2.4 OHM .063W		4
SM652061181	RES CHIP 1% 182 OHM .063W		4
SM652061820	RES CHIP 1% 82.0 OHM .063W		4
SM652110904	RES CHIP (E24) 0.5% 900K		1
SM652115062	RES CHIP (E24) 5% 6.2 OHMS		1
SM652181590	RES CHIP 1% PRECISION 113K		8
SM653101201	RES CHIP 1% 10.0 OHMS		5
SM653101230	RES CHIP 1% 20.0 OHMS		2
SM653101234	RES CHIP 1% 22.1 OHMS		18
SM653101251	RES CHIP 1% 33.2 OHMS		24
SM653101255	RES CHIP 1% 36.5 OHMS		2

900022-01 : Main Acquisition Board

Lecroy Part Number	Description	Rev	Qty
SM653101266	RES CHIP 1% 47.5 OHMS		2
SM653101269	RES CHIP 1% 51.1 OHMS		85
SM653101273	RES CHIP 1% 56.2 OHMS		20
SM653101281	RES CHIP 1% 68.1 OHMS		99
SM653101285	RES CHIP 1% 75.0 OHMS		15
SM653101289	RES CHIP 1% 82.5 OHMS		13
SM653101297	RES CHIP 1% 100 OHMS		32
SM653101305	RES CHIP 1% 121 OHMS		74
SM653101308	RES CHIP 1% 130 OHMS		37
SM653101314	RES CHIP 1% 150 OHMS		28
SM653101322	RES CHIP 1% 182 OHMS		150
SM653101326	RES CHIP 1% 200 OHMS		41
SM653101330	RES CHIP 1% 221 OHMS		13
SM653101334	RES CHIP 1% 243 OHMS		8
SM653101339	RES CHIP 1% 274 OHMS		6
SM653101343	RES CHIP 1% 301 OHMS		13
SM653101347	RES CHIP 1% 332 OHMS		13
SM653101351	RES CHIP 1% 365 OHMS		3
SM653101354	RES CHIP 1% 392 OHMS		21
SM653101358	RES CHIP 1% 432 OHMS		16
SM653101362	RES CHIP 1% 475 OHMS		23
SM653101365	RES CHIP 1% 511 OHMS		5
SM653101369	RES CHIP 1% 562 OHMS		5
SM653101373	RES CHIP 1% 619 OHMS		7
SM653101377	RES CHIP 1% 681 OHMS		1
SM653101381	RES CHIP 1% 750 OHMS		3
SM653101385	RES CHIP 1% 825 OHMS		1
SM653101393	RES CHIP 1% 1.00 K		111
SM653101397	RES CHIP 1% 1.10 K		10
SM653101401	RES CHIP 1% 1.21 K		7
SM653101410	RES CHIP 1% 1.50 K		3
SM653101416	RES CHIP 1% 1.74K		4
SM653101418	RES CHIP 1% 1.82 K		15
SM653101422	RES CHIP 1% 2.00 K		6
SM653101439	RES CHIP 1% 3.01 K		1
SM653101443	RES CHIP 1% 3.32 K		30
SM653101450	RES CHIP 1% 3.92 K		5
SM653101458	RES CHIP 1% 4.75 K		8
SM653101461	RES CHIP 1% 5.11 K		40
SM653101465	RES CHIP 1% 5.62 K		8
SM653101481	RES CHIP 1% 8.25 K		6
SM653101489	RES CHIP 1% 10.0 K		119
SM653101506	RES CHIP 1% 15.0 K		1
SM653101509	RES CHIP 1% 16.2 K		5

900022-01 : Main Acquisition Board

Lecroy Part Number	Description	Rev	Qty
SM653101514	RES CHIP 1% 18.2 K		1
SM653101522	RES CHIP 1% 22.1 K		1
SM653101531	RES CHIP 1% 27.4 K		1
SM653101557	RES CHIP 1% 51.1 K		4
SM653101569	RES CHIP 1% 68.1 K		5
SM653101585	RES CHIP 1% 100 K		2
SM653101602	RES CHIP 1% 150 K		4
SM653101614	RES CHIP 1% 200 K		4
SM653101638	RES CHIP 1% 357K		8
SM653101639	RES CHIP 1% 365 K		8
SM653101642	RES CHIP 1% 392 K		8
SM653101650	RES CHIP 1% 475 K		1
SM653101665	RES CHIP 1% 681 K		1
SM653101673	RES CHIP 1% 825 K		2
SM653101681	RES CHIP 1% 1.00 M		9
SM653181999	THERMAL SHUNT		1
SM653185107	RES CHIP 5% 100PPM 100M		5
SM654101000	CHIP JUMPER ZERO OHMS		50
SM661205822	CAP CERA CHIP 8200 PF		5
SM661207102	CAP CERA CHIP 20% .001 UF		4
SM661207103	CAP CERA CHIP 20% .01 UF		522
SM661207104	CAP CERA CHIP 20% .1 UF		157
SM661207223	CAP CERA CHIP 20% .022 UF		8
SM661255010	CAP CERA CHIP 1.0 PF		1
SM661255039	CAP CERA CHIP +/-0.25PF 3.9 PF		4
SM661255056	CAP CERA CHIP 5.6 PF		2
SM661255100	CAP CERA CHIP 5% 10 PF		9
SM661255101	CAP CERA CHIP 5% 100 PF		22
SM661255102	CAP CERA CHIP 5% 1000 PF		11
SM661255180	CAP CERA CHIP 5% 18 PF		1
SM661255181	CAP CERA CHIP 5% 180 PF		1
SM661255220	CAP CERA CHIP 5% 22 PF		1
SM661255270	CAP CERA CHIP 5% 27 PF		5
SM661255330	CAP CERA CHIP 5% 33 PF		1
SM661255470	CAP CERA CHIP 5% 47 PF		6
SM661255560	CAP CERA CHIP 5% 56 PF		2
SM661255821	CAP CERA CHIP 5% 820 PF		5
SM661256120	CAP CERA CHIP 10% 12 PF		4
SM661286103	CAP CERA CHIP 10% .01 UF		52
SM661446474	CAP CERA CHIP 10% .47 UF		2
SM661526561	CAP CERA CHIP 560PF 500V		5
SM661535620	CAP CERA CHIP 62PF 200V		4
SM661540033	CAP CERA CHIP 3.3PF 500V		6
SM661545150	CAP CERA CHIP 15PF 500V		9

900022-01 : Main Acquisition Board

Lecroy Part Number	Description	Rev	Qty
SM661726103	CAP CERA CHIP 10% .01 UF		15
SM666237476	CAP MOLD TANT CHIP 47 UF		9
SM666247106	CAP MOLD TANT CHIP 10 UF		4
SM666257336	CAP MOLD TANT CHIP 33 UF		2
SM666267227	CAP TANT 220UF 10V 20%		8
SM666327225	CAP MOLD TANT CHIP 2.2 UF		50
SM666377226	CAP MOLD TANT CHIP 22 UF		8
SM666387336	CAP MOLD TANT CHIP 33 UF		2
SM666427105	CAP MOLD TANT CHIP 1 UF		5
SM669080181	CHIP FERRITE BEAD		36

F9354-4 : Time Base Board

Lecroy Part Number	Description	Rev	Qty
719354403	PC BD PREASS'Y 9354-4	D	1
SM200169016	IC BINARY UP COUNTER 10E016		1
SM201274032	IC ECL DIVIDE BY 2 10EL32D		1
SM201549040	IC PHASE-FREQ DET MC12040		1
SM201570016	IC ECL DIFF RECEIVER 10EL16D		1
SM208272148	IC LOW POWER VCO MC12148		1
SM208470027	IC SINGLE OP AMP OP-27		1
SM208570078	IC LOW POWER REG +12V 78L12		1
SM208570805	IC POS VOLT REG 78L05		1
SM208880079	IC LOW POW REG -12V 79L12		1
SM230080619	DIODE TUNING SMD BB619		1
SM236030099	DIODE SO-PKG BAV99		4
SM240218475	DIODE ZENER BZX84C7V5		2
SM281120610	LOW POWER PMOSFET TRANSISTOR		1
SM301502001	BEAD (FERRITE CHIP)		1
SM303062068	INDUCTOR CHIP COIL 2% 6.8NH		1
SM454110025	CONN 1MM MALE 25		1
SM653101314	RES CHIP 1% 150 OHMS		1
SM653101322	RES CHIP 1% 182 OHMS		5
SM653101365	RES CHIP 1% 511 OHMS		2
SM653101389	RES CHIP 1% 909 OHMS		2
SM653101393	RES CHIP 1% 1.00 K		3
SM653101426	RES CHIP 1% 2.21K		1
SM653101447	RES CHIP 1% 3.65 K		4
SM653101557	RES CHIP 1% 51.1 K		1
SM661207103	CAP CERA CHIP 20% .01 UF		13
SM661207104	CAP CERA CHIP 20% .1 UF		2
SM661207223	CAP CERA CHIP 20% .022 UF		2

F9354-4 : Time Base Board

Lecroy Part Number	Description	Rev	Qty
SM661255010	CAP CERA CHIP 1.0 PF		1
SM661255152	CAP CERA CHIP 5% 1500 PF		2
SM661255270	CAP CERA CHIP 5% 27 PF		1
SM666247106	CAP MOLD TANT CHIP 10 UF		7

F9300-4 : GPIB + RS232 INTERFACE CARD

Lecroy Part Number	Description	Rev	Qty
102484471	CAP CERA DISC 100V 470 PF		6
106435103	CAP CERA MONO .01UF		5
106438104	CAP CERA MONO .1UF		5
147436033	CAP ALUM METAL CAN 33 UF		4
161225302	RES CARBON FILM 3 K		1
161225471	RES CARBON FILM 470 OHMS		1
161225682	RES CARBON FILM 6.8 K		2
190832102	RESISTOR NETWORK 1 K		1
200333000	IC QUAD 2-IN NAND HCT00		1
205750000	IC GAL16V8A-15LP		1
207197210	IC BUS INTERF CONTR 7210		1
207440232	IC XMTR/RCVR MAX232		1
207470160	IC BUS TRANSCEIVER 75160B		1
207470161	IC OCTL BUS XCEIVR 75161A		1
207552661	IC INTERFACE 2661A		1
309040005	CRYSTAL OSCILLATOR 4.9152 MHZ		1
453521024	CONN RT ANGLE IEEE FEM 24		1
454511040	HDR SOLD TAIL/MALE 40/RT		1
455413009	CONN RT ANGL MALE 9 S-CLIP		1
455980002	MOUNTING HDW FOR CONN SHELL		2
550010106	SCREW PAN HEAD PHIL M3X6 W/NYLOCK		4
550010108	SCREW PAN HEAD PHIL M3X8 W/NYLOCK		2
551430400	WASHER SHAKEPROOF M3		4
709300411	GPIB-RS232 INTERFACE BRACKET		1
709300421	LABEL RS232-IEEE488-2		1
719300403	PC BD PREASS'Y 9300-4		1

F9601-6 : Floppy Disk Drive Assembly

Lecroy Part Number	Description	Rev	Qty
330000002	FLOPPY DISK DRIVE 3.5"		1
453411026	CONN ZIF FOR FFC 26 POS		1
454511026	HDR SOLD TAIL/MALE 26		1
550010103	SCREW PAN HEAD PHIL M2.5X3 W/NYLOCK		4
550010706	SCREW ECO-FIX PHIL PAN M3X6 W/NYLOC		2
709600611	FLOPPY DRIVE SUPPORT		1
719601603	PC BD PREASS'Y FOR 9601-6		1
780919905	FLAT FLEX CABLE 26 P. 5CM		1
453411026	CONN ZIF FOR FFC 26 POS		1
454511026	HDR SOLD TAIL/MALE 26		1
719601603	PC BD PREASS'Y FOR 9601-6		1

FP9604 : Front Panel Assembly

Lecroy Part Number	Description	Rev	Qty
551090001	LOCKWASHER M9		4
552090075	MOUNTING NUT M9 X 0.75		4
709600030	9600 FRONT FRAME	G	1
709600560	9600-5 KNOB DIAM 9	C	7
709600570	9600-5 KNOB DIAM 12	C	4
780721022	FLAT CABLE 2X10 (22CM)	A	1
F9602-5	KEYPAD FRONT PANEL	I	1
F9604-5	QUAD CHANNEL FRONT PANEL	C	1

F9602-5 : Keypad Assembly

Lecroy Part Number	Description	Rev	Qty
551423100	FLAT WASHER M2.3		5
554422005	SCREW SELF TAPPING PT KA22x6		5
709600510	9600-5 SWITCH CAP, LIGHT GREY	D	32
709600512	9600-5 SWITCH CAP DARK GREY	D	11
709600514	9600-5 SWITCH CAP, BLUE	D	1
709600516	9600-5 SWITCH CAP, GREEN	D	1
709600534	9600-5 FRONT PANEL 4CH	A	1
709600550	9600-5 RUBBER MAT 4 CH.	D	1
S9602-5	KEYBOARD PCB ASSY 4 CHANNEL	B	1
256400105	LED YELLOW LOW CUR.		1
454224030	HDR 41612 PRESSF. FEM 30		1
719602503	PC BD PREASS'Y 9602-5	C	1

F9604-5 : Front Panel

Lecroy Part Number	Description	Rev	Qty
106438104	CAP CERA MONO .1UF		4
147436033	CAP ALUM METAL CAN 33 UF		1
161225471	RES CARBON FILM 470 OHMS		1
190042103	RESISTOR NETWORK 10 K		2
190642103	RESISTOR NETWORK 10 K		1
200331074	IC D-TYP FLOP 74HCT74		1
230020062	DIODE SWITCHING BAW62		34
425100024	ENCODER DIGITAL 24 POS		3
425101024	ENCODER DIGITAL 24 POS		8
454200030	HDR MALE THIRD 41612 TO FEM 30		1
454511020	HEADER RT ANGLE MALE 20		1
719603503	PC BD PREASS'Y 9603-5		1
MFP414	IC MONO FRNT PANEL PROCESSOR MFP414		1

CD9610 : Color Display Assembly

Lecroy Part Number	Description	Rev	Qty
CD9600-B	COLOR DISPLAY ASS'Y		1
709600230	9600-2 MONITOR SHIELD		1
CD9610-RK	RETIRFIT KIT FOR 9610		1

MLC574A : Mechanical

Lecroy Part Number	Description	Rev	Qty
315972600	RFI FILTER W/DBL FUSE BLOCK		1
377000104	LABEL, CE & UL, TEST EQUIP.	1000	1
405154002	CONN HOUSING 2-POS		1
405708001	TERMINAL ANTI-FISHHOOKING CRIMP		2
433162630	FUSE SLO-BLO 250V 6.30AMP		2
485325001	SET OF 4 FEET, DARK GREY		1
524010037	STANDOFF M3 37MM X 4.5MM HEX W/NYLO		3
530409212	FAN AXIAL 12V 1"THK 2.4W		1
550010106	SCREW PAN HEAD PHIL M3X6 W/NYLOCK	1001	13
550010116	SCREW PAN HEAD PHIL M3X16 W/NYLOCK		7

MLC574A : Mechanical

Lecroy Part Number	Description	Rev	Qty
550010130	SCREW PAN HEAD PHIL M3X30 W/NYLOCK	1001	12
550010508	SCREW FLAT HEAD PHIL M3X8 W/NYLOCK		2
550010705	SCREW ECO-FIX PHIL PAN M4X5 W/NYLOC		5
550010706	SCREW ECO-FIX PHIL PAN M3X6 W/NYLOC		48
550011106	SCREW PAN HD M2X6 BLK W/NYLOCK		12
550151116	SCREW PAN HD PHIL M5X16	1001	4
551620100	#2 FLAT WASHER S.STEEL/BLACK OXIDE		12
554035101	CLIP-ON NUT DIAM. 3.5		4
554422006	SCREW S/TAP PAN PHIL KA22X5		2
554435006	SCREW S/TAP PAN PHIL KA35X7		8
554440001	SCREW S/TAP PAN PHIL KA40X12		4
554525901	CLIP DIAM 3.1MM		1
705740013	TOP PARTITION FOR LC574	1000	1
705740015	LABEL, PROTECTIVE GND SYMBOL		1
705740016	LABEL, LC574 FUSE DATA		1
705740017	SERIAL NUMBER PLATE FOR DSO		1
705740038	LOWER COVER LCXXX DUAL FAN		1
7093XX931	INTERF. HOLE CLOSURE 93XX-9		3
7093XXP41	PROBE HOLDER		6
7093XXP91	PROBE RING CONTACT		6
709424096	MEMORY CARD INSERT		1
709600010	9600 BEZEL		1
709600020	9600 RIGHT HUB CAP		1
709600024	9600 LEFT HUB CAP		1
709600048	9600 UPPER COVER LOCK INSERT		2
709600050	9600 LOGO LECROY		1
709600075	9600 REAR FOOT		4
709600078	REAR FOOT RUBBER		4
709600810	9600-8 POWER SWITCH BUTTON		1
709600820	9600-8 POWER SWITCH ROD		1
709674351	9674-3 SHIELD LOWER PARTITION		6
780721105	20 LINE FLAT CABLE		1
780834509	GROUND CABLE YELLOW/GREEN 9CM		1
780891032	FLAT CABLE 2X20 (4 CONNECT)		1
780981003	FLAT CABLE 2X20 (3.5 CM)		1
780991606	FLAT CABLE 2X13 (6 CM)		1

MLC574A : Mechanical

Lecroy Part Number	Description	Rev	Qty
785740005	LC574 LINE INPUT CABLE	1001	1
900024	LCXXX POWER SUPPLY W/FAN		1
CD9610	COLOR DISPLAY ASSY (MODIFY)		1
CH599012012	"5-MINUTE EPOXY"		0
F9300-4	GPIB & RS232 INTERFACE CARD	1000	1
F9601-2	CONNECTOR BOARD	1002	1
F9601-6	FLOPPY DISK DR ASSY	1000	1
F9601-8	MAIN SWITCH BOARD	1001	1
FP9604X	FRONT PANEL ASSY 4 CHANNEL		1
FPLC574-3	MAIN CARD FRNT PANEL LC574XX (PEMS)	1002	1
RP9602-9X	REAR PANEL 9602-9		1
USLC574-3	UPPER SHIELD ASS'Y LC574	1002	1

900024: Power Supply

Lecroy Part Number	Description	Rev	Qty
235010005	DIODE RECTIFIER 1N4005		1
315116045	45W POWER SUPPLY -2V +/-6V		1
377051005	LABEL "DANGER ------ONLY"		1
377141000	LABEL MATRIX ADHESIVE PAPER		1
377900001	LABEL BARCODE 0.25" X 1.50"		1
455011002	CONTACT (CRIMP) MALE		2
455110002	BLOCK FOR MALE PINS 2 POS		1
520001006	LOCKIN NYLON P.C.BOARD SUPPORT		2
520014124	LOCKING NYLON PCB STANDOFF		6
530409406	FAN AXIAL 12V 3.1W 43 CFM		1
550010108	SCREW PAN HEAD PHIL M3X8 W/NYLOCK		7
550010706	SCREW ECO-FIX PHIL PAN M3X6 W/NYLOC		4
554035101	CLIP-ON NUT DIAM. 3.5		3
554440001	SCREW S/TAP PAN PHIL KA40X12		3
594120001	TIEWRAP		4
705740003	POWER SUPPLY CHASSIS		1
705740008	CABLE HARNESS FOR PSLC574-2		1
705740020	900024 POWER SUPPLY COVER		1
780834509	GROUND CABLE YELLOW/GREEN 9CM		1
785740001	CABLE PSLC574-2 TO PSI 1724		1

900024: Power Supply

Lecroy Part Number	Description	Rev	Qty
785740002	CABLE PSLC574-2 TO REAR PNL AC CABL		1
789384002	-2V SUPPLY LINE CABLE		1
935X-PS1225	POWER SUPPLY PS1724		1
PSLC574-2	LINE TRIG CARD &3.3V DC-DC CONV P/S		1

PSLC574-2 : Auxiliary Power Supply

Lecroy Part Number	Description	Rev	Qty
106435102	CAP CERA MONO .001UF		2
142824685	CAP TANT DIP CASE 6.8 UF		1
146544471	CAP MINI ALUM 20% 470 UF		1
146564227	CAP MINI ALUM 20% 220 UF		3
161225201	RES CARBON FILM 200 OHMS		1
161225511	RES CARBON FILM 510 OHMS		1
161335104	RES CARBON FILM 100 K		1
161335201	RES CARBON FILM 200 OHMS		1
161335271	RES CARBON FILM 270 OHMS		1
161445104	RES COMP 1/2W 5% 100 K		1
230110005	DIODE SWITCHING 1N4448		2
235010006	DIODE RECTIFIER 1N4006		1
240035333	DIODE ZENER 3.3V 1N5333A		1
260000111	OPTOISOLATOR H11L1		1
270110003	TRANSISTOR NPN PN2222A		1
270121003	TRANSISTOR PWR NPN MJE13003		1
315826501	PWR CONVERTER DC-DC 3.3VDC OUTPUT		1
454115003	HDR FRICTION LOCK 3		1
454115014	HDR FRICTION LOCK 14		1
454115103	HDR FRICTION LOCK 3X1-PIN		2
454810002	HDR FRICTION LOCK 2-PIN,RIGHT ANGLE		1
455021008	CONTACT (CRIMP) FEMALE		2
455123002	BLOCK FOR FEM PINS 2 POS		1
510140002	P.C. MOUNT SPADE LUG		1
590001022	WIRE TEFLON 7/30 BLK 22		0
590221022	WIRE TEFLON 7/30 RED 22		0
715740002	PCB PREASS'Y FOR PSLC574-2 PWR SPLY		1

RPLC574 : Rear Panel Assembly

Lecroy Part Number	Description	Rev	Qty
315972600	RFI FILTER W/DBL FUSE BLOCK		1
377000104	LABEL, CE & UL, TEST EQUIP.		1
405154002	CONN HOUSING 2-POS		1
405708001	TERMINAL ANTI-FISHHOOKING CRIMP		2
433162630	FUSE SLO-BLO 250V 6.30AMP		2
530409212	FAN AXIAL 12V 1"THK 2.4W		1
550010508	SCREW FLAT HEAD PHIL M3X8 W/NLOCK		2
550010706	SCREW ECO-FIX PHIL PAN M3X6 W/NYLOC		48
554035101	CLIP-ON NUT DIAM. 3.5		4
554440001	SCREW S/TAP PAN PHIL KA40X12		4
705740015	LABEL, PROTECTIVE GND SYMBOL		1
705740016	LABEL, LC574 FUSE DATA		1
705740017	SERIAL NUMBER PLATE FOR DSO		1
7093XX931	INTERF. HOLE CLOSURE 93XX-9		3
780834509	GROUND CABLE YELLOW/GREEN 9CM		1
RP9602-9X	REAR PANEL 9602-9		1

UCLCXXX : Upper Cover Assembly

Lecroy Part Number	Description	Rev	Qty
350150001	GASKET,ULTRAFLEX,PSA,6" X 0.25"DIA		1
350920024	MONEL MESH STRIP DIAM 2.4MM		28
380450012	NR ADHESIVE TAPE 4X12 MM		25
550011120	SCREW PAN HEAD PHIL M4X20 W/NYLOCK		2
709600040	9600 UPPER COVER		1
709600090	TIP-UP HANDLE		1

USLC574 : Upper Shield Assembly

Lecroy Part Number	Description	Rev	Qty
550010706	SCREW ECO-FIX PHIL PAN M3X6		3
554525901	CLIP DIAM 3.1MM		1
709600810	9600-8 POWER SWITCH BUTTON		1
709600820	9600-8 POWER SWITCH ROD		1
F9601-8	MAIN SWITCH BOARD	1001	1
USLC574-3	UPPER SHIELD ASS'Y LC574	1002	1

F9601-8 : Main Switch Assembly

Lecroy Part Number	Description	Rev	Qty
161445105	RES CARBON FILM 1 MEG		1
416121004	MAIN POWER SWITCH		1
454115103	HDR FRICTION LOCK 3X1-PIN		3
719601803	PC BD PREASS'Y FOR 9601-8		1

LCXXX-HD01 : Hard Disk Drive Assembly

Lecroy Part Number	Description	Rev	Qty
780891032	FLAT CABLE 2X20 (4 CONNECT)	A	1
F9300-8	PCMCIA III CONTROLLER	D	1

F9300-8 : Hard Disk Interface

Lecroy Part Number	Description	Rev	Qty
205750000	IC AND-OR GATE ARRAY 16V8		2
330100100	PCMCIA HEADER ASS'Y TOP/LEFT		1
389340009	AUTO-ADHES. RUBBER 12X4MM		1
454511040	HDR SOLD TAIL/MALE/40/RT		1
550120606	SCREW OVAL HD PHIL M2X6		4
550430106	SCREW CYL HD PHIL M3X6		4
551430400	WASHER SHAKEPROOF M3		4
552120100	NUT HEX M2X0.5D		4
594230002	CABLE CLIP ADHESIVE BACK		1
709300811	9300-8 PCMCIA III CONT.BRACKET	B	1
709300821	9300-8 PCMCIA III CONT. COVER	B	1
709300831	9300-8 PCMCIA III CONTR. LABEL	A	1
719300803	PC BD PREASS'Y 9300-8	B	1
CH599011002	LOCTITE SCREW LOCK GLUE		1
SM200178002	IC 2-INPUT NOR HCT02		1
SM200178374	IC D-TYP FLOP 74HCT374		2
SM201178175	IC QUAD D FLIP/FLOP 74HCT175		1
SM206885245	IC BUS TRANSCVR ABT245		1
SM207170036	IC HEX BUFFER 3-ST. PC74HCT365		3
SM208470358	IC DUAL OP AMP 358D		1
SM208780109	IC MICROPOWER DC-DC CONV.		1
SM232032814	DIODE 2814		3
SM275330858	TRANSISTOR PNP BC858C		1
SM280171005	TRANS MOSFET MTD10N05E		1
SM300056332	INDUCTOR WOUND 33 UH		1
SM652101102	RES CHIP (E24) 1% 1 K		3

F9300-8 : Hard Disk Interface

Lecroy Part Number	Description	Rev	Qty
SM652101103	RES CHIP (E24) 1% 10 K		18
SM652101104	RES CHIP (E24) 1% 100 K		1
SM652101122	RES CHIP (E24) 1% 1.2 K		1
SM652101220	RES CHIP (E24) 1% 22 OHMS		1
SM652101334	RES CHIP (E24) 1% 330 K		1
SM652101511	RES CHIP (E24) 1% 510 OHM		1
SM652101513	RES CHIP (E24) 1% 51 K		1
SM654101000	CHIP JUMPER ZERO OHMS		1
SM661207103	CAP CERA CHIP 20% .01UF (0805)		11
SM661207104	CAP CERA CHIP 20% .1 UF		6
SM666327225	CAP MOLD TANT CHIP 2.2 UF		1
SM666377226	CAP MOLD TANT CHIP 22 UF		3

LCXXX-GP01 : Graphic Printer Assembly

Lecroy Part Number	Description	Rev	Qty
334000402	THERMAL PAPER FOR SEIKO PRINTER		1
334000832	THERMAL PRINTER UNIT		1
350150001	GASKET,ULTRAFLEX,PSA,6" X 0.25"DIA		1
350920024	MONEL MESH STRIP DIAM 2.4MM		28
380450012	NR ADHESIVE TAPE 4X12 MM		25
389340008	AUTO-ADHESIVE RUBBER BAND 12X2MM		3
530040005	SLIDE LATCH TAB STYLE		2
550010105	SCREW PAN HEAD PHIL M3X5 W/NYLOCK		6
550010106	SCREW PAN HEAD PHIL M3X6 W/NYLOCK	1001	4
550011120	SCREW PAN HEAD PHIL M4X20 W/NYLOCK		2
551430100	FLAT WASHER M3		3
551430400	WASHER SHAKEPROOF M3		4
552430300	NUT OPEN-END ACORN M3		3
594120003	TIEWRAP		2
709450523	PUSH SWITCH EXTENDER		1
709600090	TIP-UP HANDLE		1
709601010	GP01 OPTION UPPER COVER		1
709601020	GRAPHIC PRINTER FRAME		1
70GP01041	GRAPHIC PRINTER COVER AXLE		1
70GP01051	GRAPHIC PRINTER CUTTER		1

LCXXX-GP01 : Graphic Printer Assembly

Lecroy Part Number	Description	Rev	Qty
70GP01061	GRAPHIC PRINTER SWITCH BUTTON		1
780721022	FLAT CABLE 2X10 (22CM)		1
780791604	FLAT CABLE 2X13 (4CM)		1
BOX-GP01	GP01 GRAPHIC PRINTER BOX		1
COVER-GP01	GP01 GRAPHIC PRINTER COVER		1
F9300-7	PRINTER CONTROLLER	1005	1

LC574-CKTRIG Option : External Clock, External Reference and Trigger Out

Lecroy Part Number	Description	Rev	Qty
550010706	SCREW ECO-FIX PHIL PAN M3X6 W/NYLOC		2
594120001	TIEWRAP		2
594220026	MICRO WIRE CLIP, SIDE ENTRY		1
709350331	935X-CKTRIG PANEL		1
709350341	10MHZ EXT REF LABEL		1
709350351	500MHZ EXT CLK LABEL		1
709350361	TRIG COMP OUT LABEL		1
780881135	CABLE COAX 50 OHM, MCA-BNC		3
93XX-CKTRIG-OM	- CKTRIG OPERATOR'S MANUAL		1

F9300-7 : Printer Controller

Lecroy Part Number	Description	Rev	Qty
146544471	CAP MINI ALUM 20% 470UF		1
147494472	CAP ALU COMPACT AXIAL 4700 UF		1
190042103	RESISTOR NETWORK 10 K		1
190042472	RESISTOR NETWORK 4.7 K		2
207140007	IC QUAD STEP MOTOR DRIVER		1
208122002	IC VOLT REG POS UA7805		2
208590350	IC ADJ POWER REG 3A LM350		1
309380016	CRYSTAL OSC (PROGR) 16 MHZ		1
416161003	SWITCH PUSHBUTTON SPST		1
430430002	RELAY 1 FORM C SPDT		1
454111002	HEADER STRAIGHT 2-PINS		1
454111006	HEADER STRAIGHT 6-PINS		1
454113003	HEADER STRAIGHT 3-PINS		1
454121003	BLOC FOR SOCKETS 3-PIN		1
454511020	HDR SOLD TAIL/MALE 20		1

F9300-7 : Printer Controller

Lecroy Part Number	Description	Rev	Qty
454511026	HDR SOLD TAIL/MALE 26		1
554435401	RIVET "RIVSCREW" M 3.5		3
719300703	PC BD PREASS'Y 9300-7	F	1
SM200330125	IC QUAD BUFFER 74HC125		1
SM207470175	IC QUAD DIFF LINE RECEIVER		4
SM208580336	IC REF DIODE LM336-2.5V		1
SM208650393	IC DUAL VOLT COMP LM393M		1
SM227080500	IC THERM PRINTER GATE ARRAY		1
SM227090501	IC THERM PRINTER CPU		1
SM236030099	DIODE SO-PKG BAV99		8
SM270330848	TRANSISTOR NPN BC848C		2
SM652101101	RES CHIP (E24) 1% 100 OHM		12
SM652101102	RES CHIP (E24) 1% 1 K		1
SM652101103	RES CHIP (E24) 1% 10 K		26
SM652101104	RES CHIP (E24) 1% 100 K		1
SM652101132	RES CHIP (E24) 1% 1.3 K		3
SM652101151	RES CHIP (E24) 1% 150 OHM		1
SM652101162	RES CHIP (E24) 1% 1.6 K		2
SM652101201	RES CHIP (E24) 1% 200 OHM		1
SM652101223	RES CHIP (E24) 1% 22 K		1
SM652101301	RES CHIP (E24) 1% 300 OHM		3
SM652101302	RES CHIP (E24) 1% 3 K		1
SM652101303	RES CHIP (E24) 1% 30 K		1
SM652101391	RES CHIP (E24) 1% 390 OHM		1
SM652101472	RES CHIP (E24) 1% 4.7 K		4
SM652101510	RES CHIP (E24) 1% 51 OHMS		1
SM652101513	RES CHIP (E24) 1% 51 K		1
SM652101514	RES CHIP (E24) 1% 510 K		1
SM652101563	RES CHIP (E24) 1% 56 K		2
SM652101621	RES CHIP (E24) 1% 620 OHM		2
SM652101682	RES CHIP (E24) 1% 6.8 K		1
SM654101000	CHIP JUMPER ZERO OHMS		2
SM661127104	CAP CERA CHIP 20% .1 UF		2
SM661207103	CAP CERA CHIP 20% .01UF (0805)		23
SM661255101	CAP CERA CHIP 5% 100 PF		1
SM661255471	CAP CERA CHIP 5% 470 PF		4

UCLCGP01 : GPO1 Upper Cover

Lecroy Part Number	Description	Rev	Qty
350150001	GASKET,ULTRAFLEX,PSA,6" X 0.25"DIA		1
350920024	MONEL MESH STRIP DIAM 2.4MM		28
380450012	NR ADHESIVE TAPE 4X12 MM		25
389340008	AUTO-ADHESIVE RUBBER BAND 12X2MM		3
550011120	SCREW PAN HEAD PHIL M4X20 W/NYLOCK		2
709600090	TIP-UP HANDLE		1
709601010	GP01 OPTION UPPER COVER		1

PP094 : 4GS/s Adapter

Lecroy Part Number	Description	Rev	Qty
554425003	SCREW S/TAP PHIL M2.5X6 BLACK		6
554425005	SCREW TAPTITE M2.5X6		4
7093XXP41	PROBE HOLDER		1
7093XXP53	PROBE FRAME		2
7093XXP91	PROBE RING CONTACT		1
70PP09400	PP094 LEFT LABEL	1000	1
70PP09401	PP094 RIGHT LABEL	1002	1
BOX-PP092	PP092 BOX		1
FPP094	4GS/S ADAPTOR FOR 9384	1000	1

BOX-PP092 : Box for PP092

Lecroy Part Number	Description	Rev	Qty
554420501	RETAINING PIN 2 X 18		3
554425005	SCREW TAPTITE M2.5X6		4
70PP09211	PP092 FRONT PANEL		1
70PP09221	PP092 LEFT SHELL		1
70PP09231	PP092 RIGHT SHELL		1
70PP09241	PP092 SPACER		1

FPP094 : Adapter Board

Lecroy Part Number	Description	Rev	Qty
454340002	HDR SOLD TAIL/WW 2		1
7093XXP01	RIGHT ANGLE RECEPT. CONNECTOR		1
7093XXP11	RIGHT ANGLE PIN CONNECTOR		2
7093XXP21	BULKHEAD RECEPTACLE FEMALE BNC		1
7093XXP31	CONN BULKHEAD MALE BNC		2
71PP09400	PP094 P.C. PREASS'Y		1
SM205108002	IC EEPROM 2K BIT IIC BUS		1
SM240218451	DIODE ZENER BZX84C5V1		1
SM653101251	RES CHIP 1% 33.2 OHMS		6
SM653101339	RES CHIP 1% 274 OHMS		1
SM653101410	RES CHIP 1% 1.50 K		1
SM653101489	RES CHIP 1% 10.0 K		1
SM661207103	CAP CERA CHIP 20% .01 UF		1

Accessories

Lecroy Part Number	Description	Rev	Qty
433162630	FUSE SLO-BLO 250V 6.30AMP		2
530500017	BOOK CASE FOR LCXXX		1
589203218	AC CORD/US-CANADA PLUG		1
597574011	ACCESSORY CARTON W/URETHANE INSERT		1
597574012	PE FOAM END-CAPS(PAIR) FOR LCXXX		1
597574013	MASTER CARTON FOR LCXXX SHIPPING		1
597940014	PLASTIC BAG FOR 94XX & 93XX		1
598761004	RECLOSABLE 2 MIL BAG 3" X 5"		1
700009002	REGISTRATION CARD INTERNATIONAL VER		1
700009003	REGISTRATION CARD DOMESTIC VERSION		1
700101100	LABEL, OSCILLOSCOPE BOX	1000	1
709600015	LCXXX PROTECTIVE COVER		1
CALIB-DE1	CALIBRATION DOCUMENT ENVELOPE	1000	1
LCXXX-HG-E	HANDS ON GUIDE FOR LCXXX SCOPES		1
LCXXX-OM-E	OPERATORS MANUAL FOR LCXXX SCOPES		1

Accessories

Lecroy Part Number	Description	Rev	Qty
LCXXX-RM-E	REMOTE CNTRL MANUAL FOR LCXXX SCOPE		1
LCXXX-WP01	ADVANCED WAVEFORM MATH PACKAGE		0
LCXXX-WP02	SPECTRUM ANALYSIS PACKAGE		0
LCXXX-WP03	HISTOGRAMS PACKAGE		0
LCXXX-WP03-OM-E	STATIST. ANALYS. PACK. MANUAL		1
LCXXXCECERT	DECLARATION OF CONFORMITY LCXXX		2
PP005	PROBE 10 MOHM 10:1 500V 500MHZ		4
PP094	4GS/S ADAPTER FOR 9384/LC574	1000	1

8. Mechanical Parts

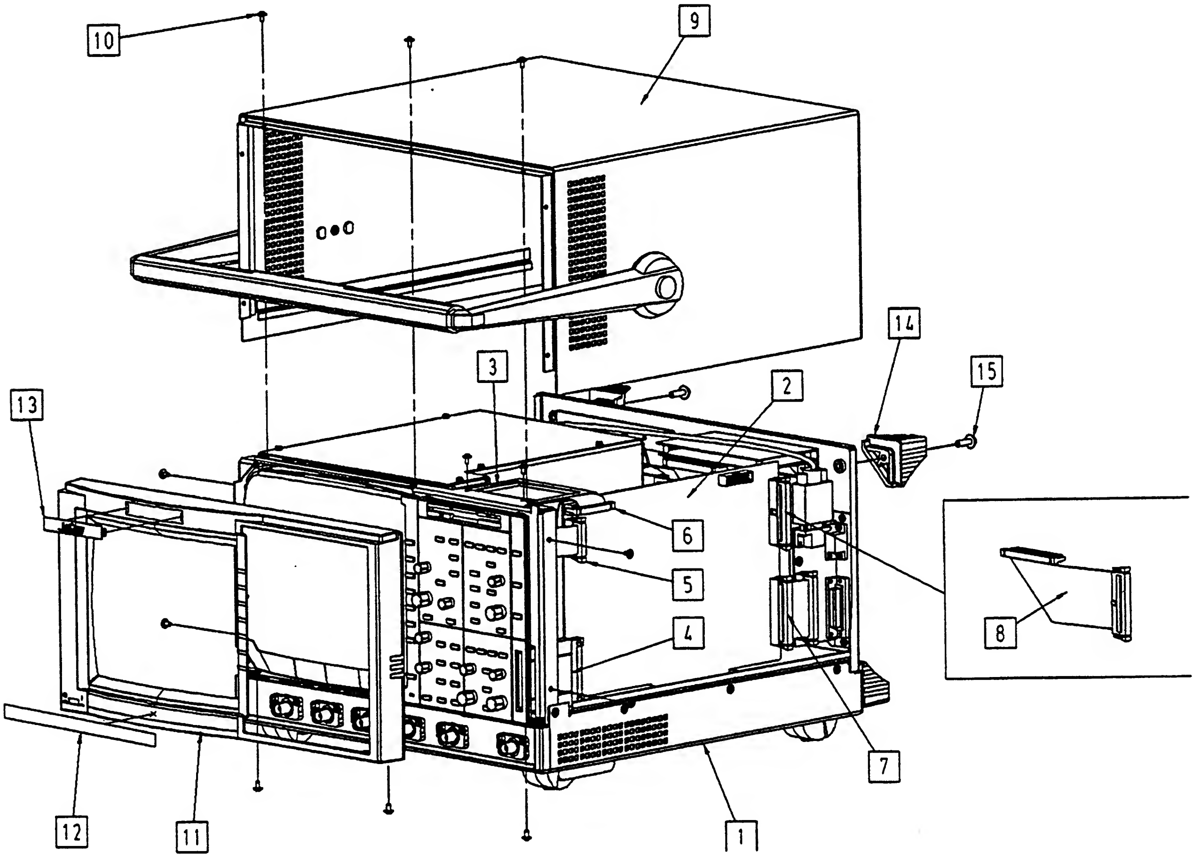


Figure 8-1 : LC574A Cabinet

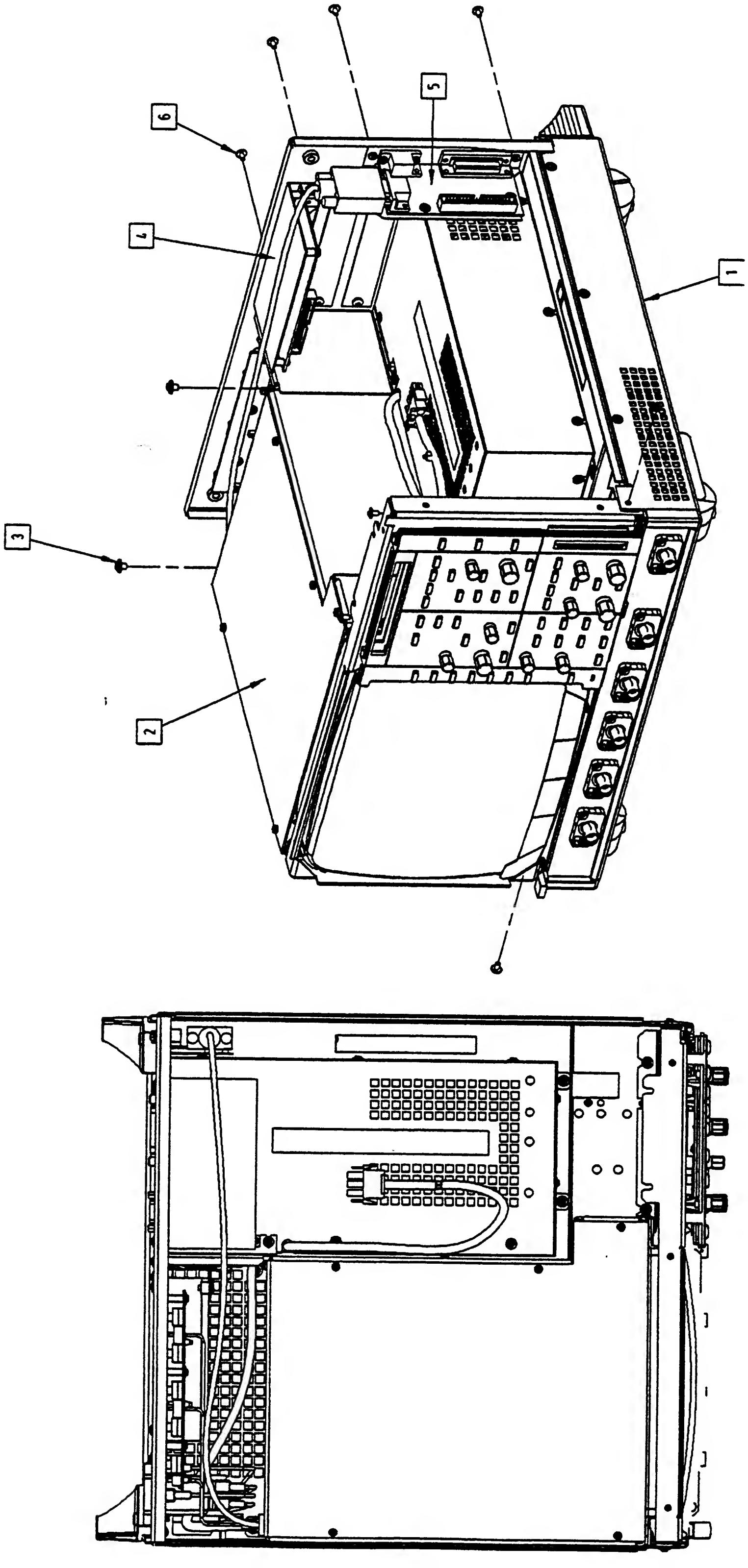


Figure 8-2 : LC574A Assembly

LC574A Cabinet Replaceable Parts (Figure 8-1)

Item	LeCroy Part Number	Qty	Description
1	LCXXX	1	Lower Cover Assembly
2	F9601-1-8 for LC574A	1	Processor Board
2	F9601-1-8 for LC574AM	1	Processor Board
2	F9601-1-64 for LC574AL	1	Processor Board
3	F9601-6	1	Floppy Disk Drive Assembly
4	709424096	1	Insertion Guide for Memory Card
5	780721105	1	Flat Cable 2X10 (5,5 cm)
6	780991606	1	Flat Cable 2X13 (6 cm)
7	780981003	1	Flat Cable 2X20 (3,5 cm)
8	780981032	1	Flat Cable 2X20 (4 connector)
9	UCLCXXX-GP01	1	LCXXX Upper Cover Assembly
10	550010706	12	Screw eco-fix M3x6 w/Nylock
11	709600010	1	9600 Bezel
12	705740301	1	LC574A Front Label
12	705740302	1	LC574AM Front Label
12	705740303	1	LC574AL Front Label
13	709600050	1	LeCroy Logo
14	709600075	2	9600 Rear Foot
15	550151116	2	Screw Pan Hd Phil M5x16
16	709600078	2	Rear Foot Rubber

LC574A Assembly Replaceable Parts (Figure 8-2)

Item	LeCroy Part Number	Qty	Description
1	LCXXX	1	Lower Cover Assembly
2	CD9610	1	Monitor Assembly
3	550010705	2	Screw eco-fix M4x5 w/Nylock
4	F9300-4	1	GPIB & RS232 Interface Card
5	F9601-2	1	Centronics & VGA Interface Card
6	550010706	8	Screw eco-fix M3x6 w/Nylock

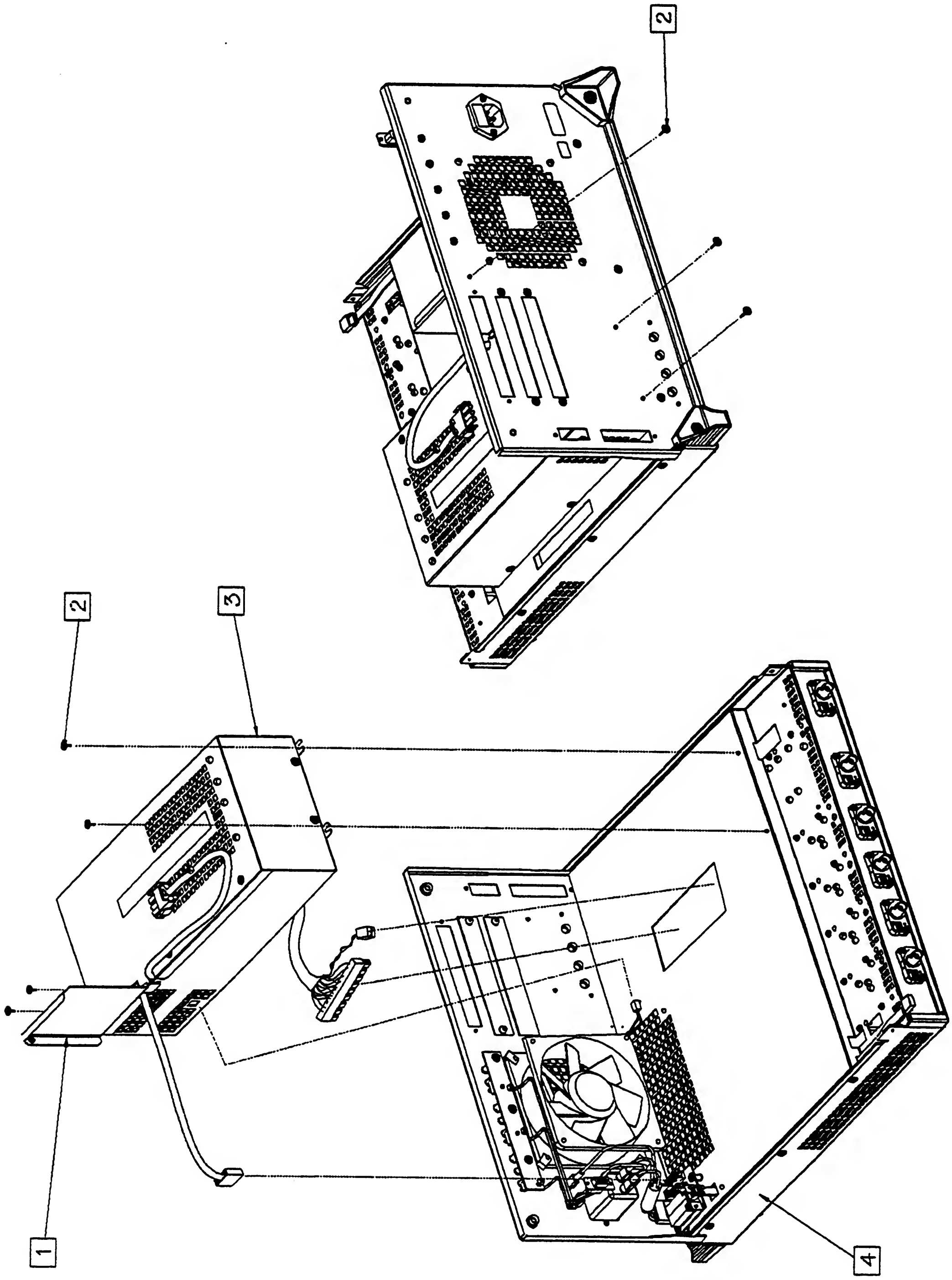


Figure 8-3 : LC574A Chassis

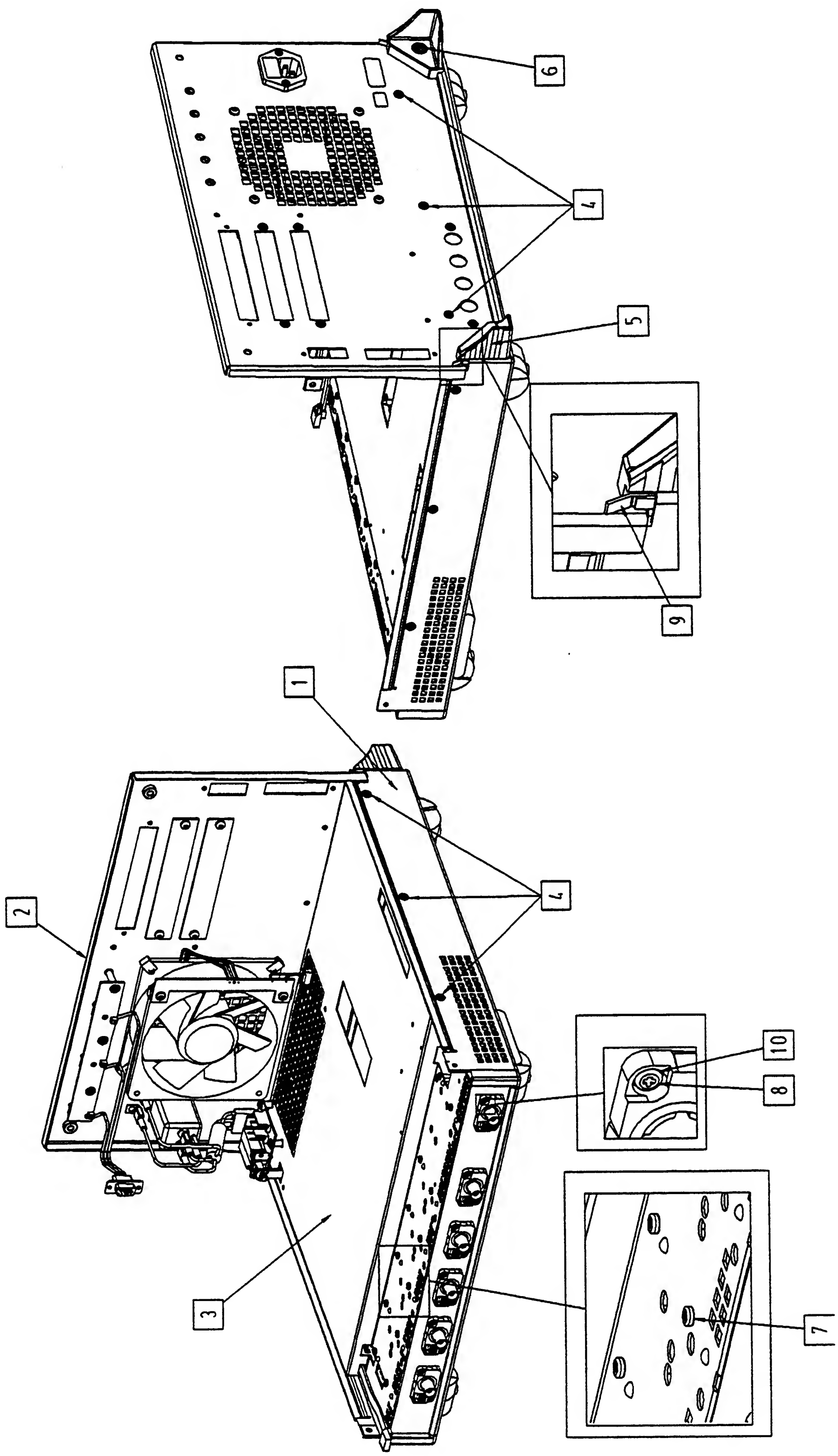


Figure 8-4 : LC574A Lower Cover

LC574A Chassis Replaceable Parts (Figure 8-3)

Item	LeCroy Part Number	Qty	Description
1	705740013	1	Top partition LC574
2	550010706	7	Screw eco-fix M3x6 w/Nylock
3	900024	1	Power Supply w Fan
3	PSLC574	1	Power Supply w/o Fan
4	LCXXX	1	Lower Cover Assembly
5	USLC574-3	1	Upper Shield Assy LC574

LC574A Lower Cover Replaceable Parts (Figure 8-4)

Item	LeCroy Part Number	Qty	Description
1	LCXXX	1	Lower Cover Assembly
2	RPLC574	1	Rear Panel Assembly
3	USLC574-3	1	Upper Shield
4	550010706	9	Screw eco-fix M3x6 w/Nylock
5	709600070	2	Rear Foot
6	550151116	2	Screw eco-fix M5X16 w/Nylock
7	550010130	12	Screw cyl hd phil M3X30 w/ Nylock
8	550011106	6	Screw pan hd M2X6 black w/Nylock
9	709600048	2	Lock Spring
10	551620100	6	Flat Washers steel/black
11	709600078	2	Rear Foot Rubber

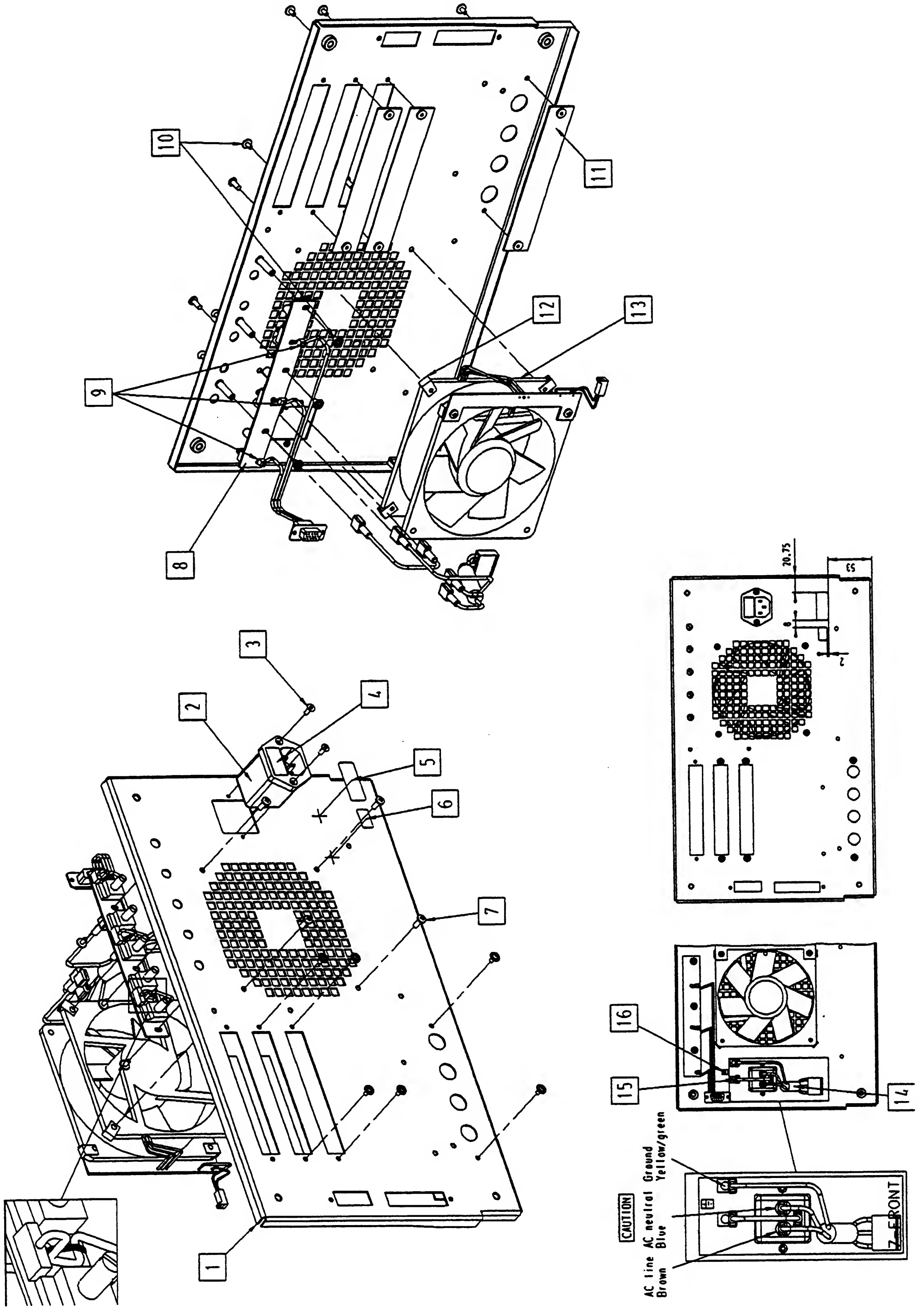


Figure 8-5 : LC574A Rear Panel Assembly

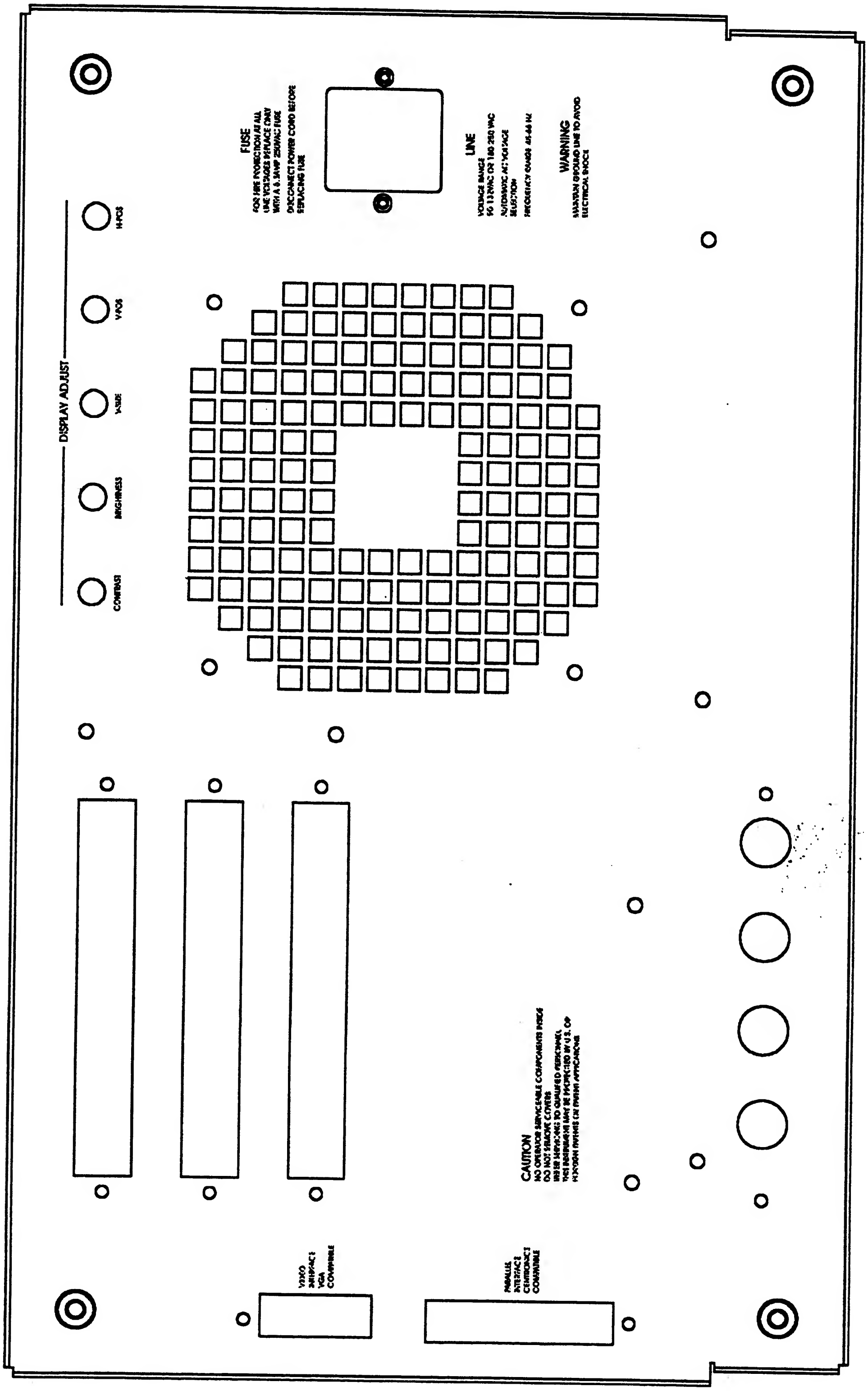

FUSE
FOR FIRE PROTECTION AT ALL
LINE VOLTAGES REPLACE ONLY
WITH A 6.3AMP 250VAC FUSE
DISCONNECT POWER CORD BEFORE
REPLACING FUSE
LINE
VOLTAGE RANGE
90-132VAC OR 180-250 VAC
AUTOMATIC AC VOLTAGE
SELECTION
FREQUENCY RANGE 45-66 Hz
WARNING
MAINTAIN GROUND LINE TO AVOID
ELECTRICAL SHOCK
DISPLAY ADJUST
H-POS
V-POS
V-SIZE
BRIGHTNESS
CONTRAST
CAUTION
NO OPERATOR SERVICEABLE COMPONENTS INSIDE
DO NOT REMOVE COVERS
REFER SERVICING TO QUALIFIED PERSONNEL
THIS INSTRUMENT MAY BE PROTECTED BY U.S. OR
FOREIGN PATENTS OR PATENT APPLICATIONS
VIDEO
INTERFACE
VGA
COMPATIBLE
PARALLEL
INTERFACE
CENTRONICS
COMPATIBLE

Figure 8-6 : LC574A Rear Panel

LC574A Rear Panel Replaceable Parts (Figure 8-5)

Item	LeCroy Part Number	Qty	Description
1	RP9602-9	1	Rear Panel
2	315972600	1	Line input Filter
3	550010508	2	Screw flat hd phil M3X8 w/ Nylock
4	433162630	2	Fuse slow-blo 6.3A/250 V
5	705740017	1	Serial Number Plate
6	377000104	1	CE Label
7	554440001	4	Screw pt phil KA40X12 w/Nylock
8	CD9610-1	1	CD9610 Adjustment Board
9	594120006	3	Tiewrap
10	550010706	9	Screw eco-fix M3X6
11	7093XX931	3	Interface Hole Closure
12	554035101	4	Clip on nut diam 3.5
13	530409212	1	Fan Axial 12V 1" Thick 2.4 W
14	785740005	1	Line Input cable
15	780834509	1	Ground Cable yellow/green 9 cm
16	705540015	1	Label Ground Symbol
17	705740016	1	Label Fuse Data

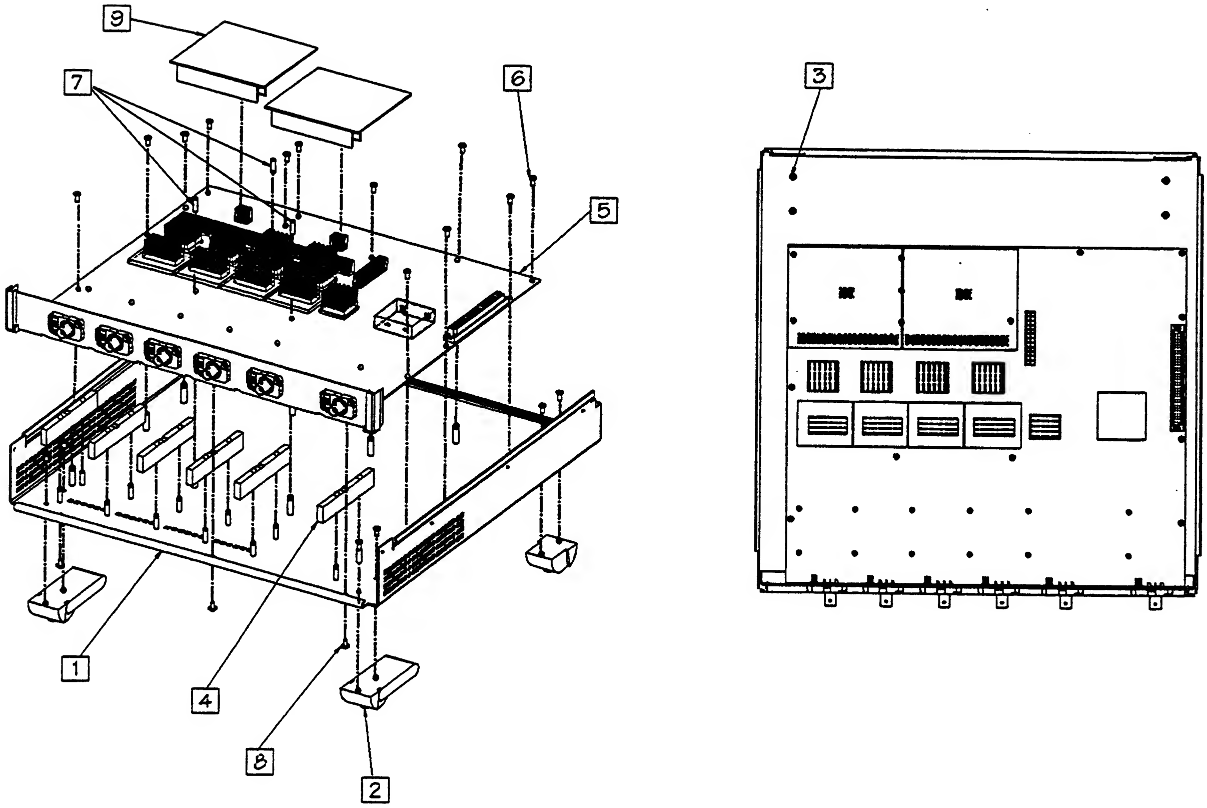


Figure 8-7 : LC574A Main Board Assembly

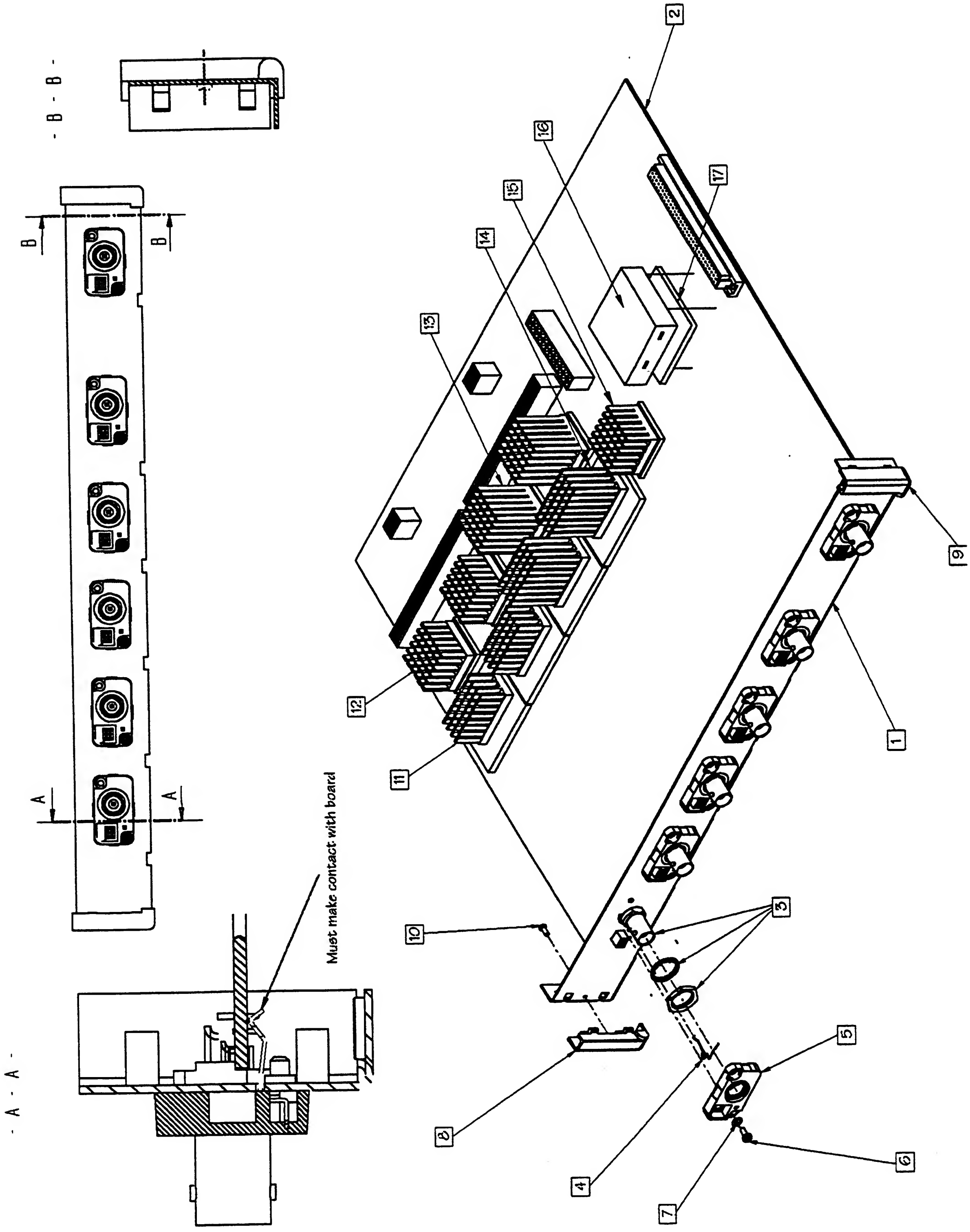


Figure 8-8 : LC574A Main Board

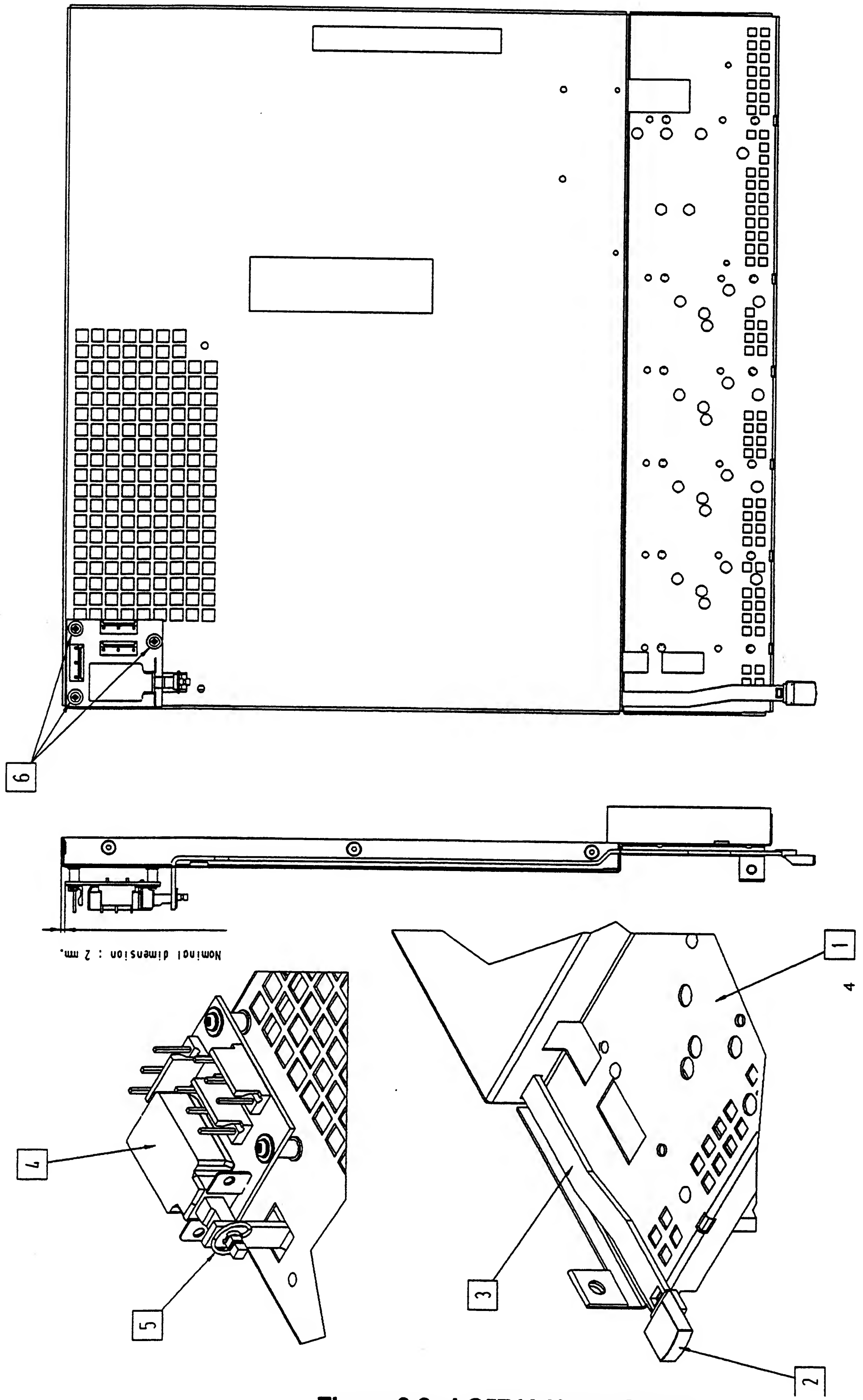


Figure 8-9 : LC574A Upper Shield

LC574A Main Board Assembly Replaceable Parts (Figure 8-7)

Item	LeCroy Part Number	Qty	Description
1	705740038	1	Lower Cover LCXXX Dual Fan
2	485325001	1	Set of 4 Feet dark grey
3	554435006	8	Screw pt phil KA35X7
4	709674351	6	Shield Lower Partition
5	F9394-31 or 900022	1	Main Board
6	554430401	12	Screw with lockwasher M3X6
7	524010037	3	Standoff M3 37MMx4.5MM Hex w/Nylock
8	550010706	3	Screw eco-fix M3X6 w/Nylock
9	9384M-2	2	Acquisition Memory 2X100k, LC574A
9	9384M-2	2	Acquisition Memory 2X500k, LC574AM
9	9384MEM-2	2	Acquisition Memory 2X2G, LC574AL

LC574A Main Board Replaceable Parts (Figure 8-8)

Item	LeCroy Part Number	Qty	Description
1	FPLC574-3	1	Main Card Panel LC574XX
2	F9384-31 or 900022	1	Main Card
3	7093XXP21	6	Bulkhead Receptacle Female BNC
4	7093XXP91	6	Probe Ring Contact
5	7093XXP41	6	Probe Holder
6	554425003	6	Screw Pan Head M2X6 black w/ Nylock
7	551620100	6	#2 Flat Washer S. Steel, Black Oxide
8	709600024	1	Left Hub Cap
9	709600020	1	Right Hub Cap
10	554422006	2	Screw Self Tapping KA22X5
11	505121002	2	Heatsink 1.5"X.65", .8" High
12	505121003	2	Heatsink 1.1"X1.0", .8" High
13	709384013	2	Heatsink 24X23X32H
14	709384014	2	Heatsink 42X25X32H
15	505121004	1	Heatsink .9"X1.0", .8" High
16	709354411	1	9354-4 Oscillator Shield
17	F9354-4	1	400-500 MHz PLL Oscillator

LC574A Upper Shield Replaceable Parts (Figure 8-9)

Item	LeCroy Part Number	Qty	Description
1	USLC574-3	1	Upper Shield Assembly
2	709600810	1	Main Switch Button
3	709600820	1	Power Switch Rod
4	F9601-8	1	Main Switch
5	554525901	1	Clip diam 3.1 mm
6	550010706	3	Screw eco-fix M3X6

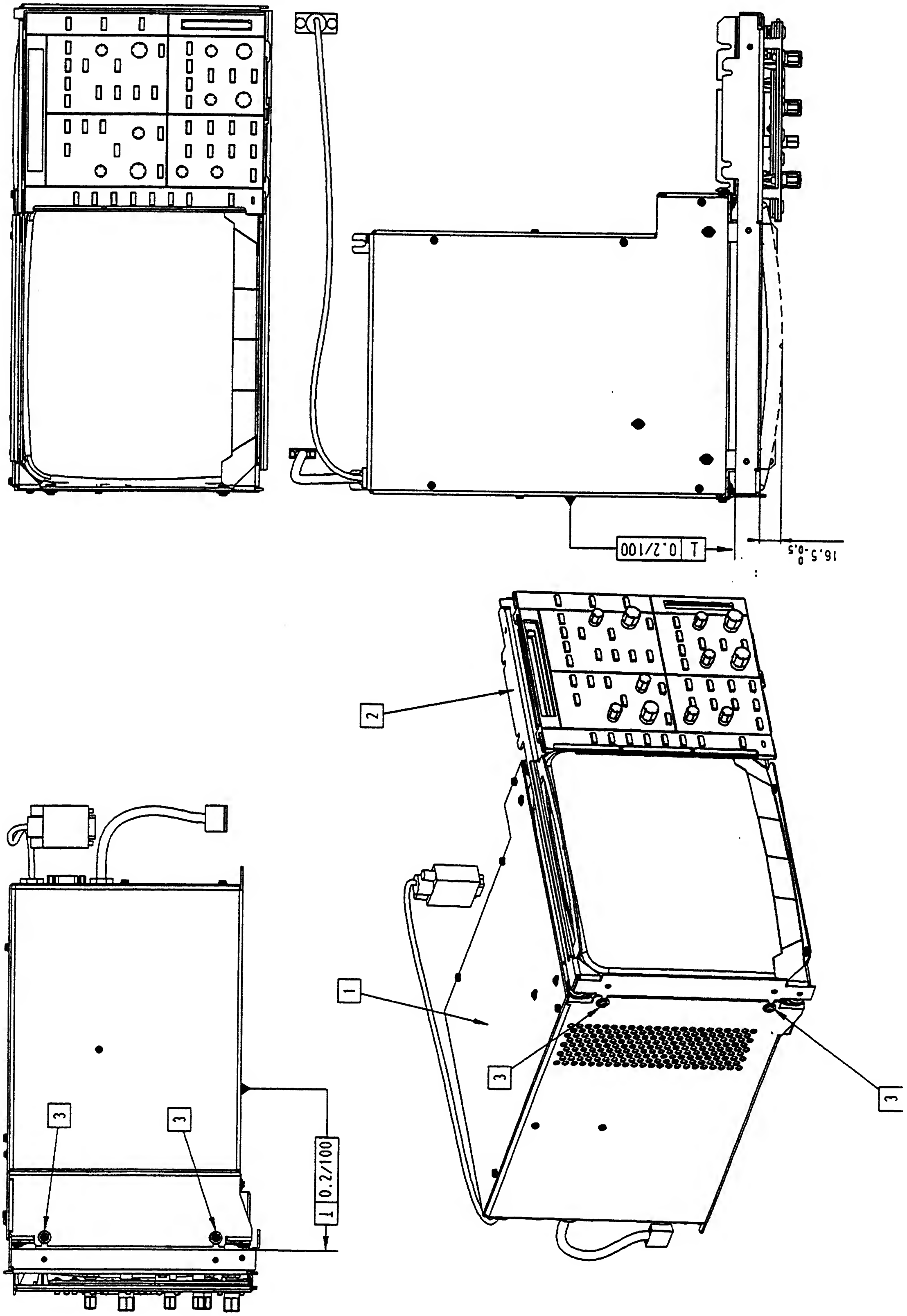


Figure 8-10 : LC574A Monitor and Frame Assembly

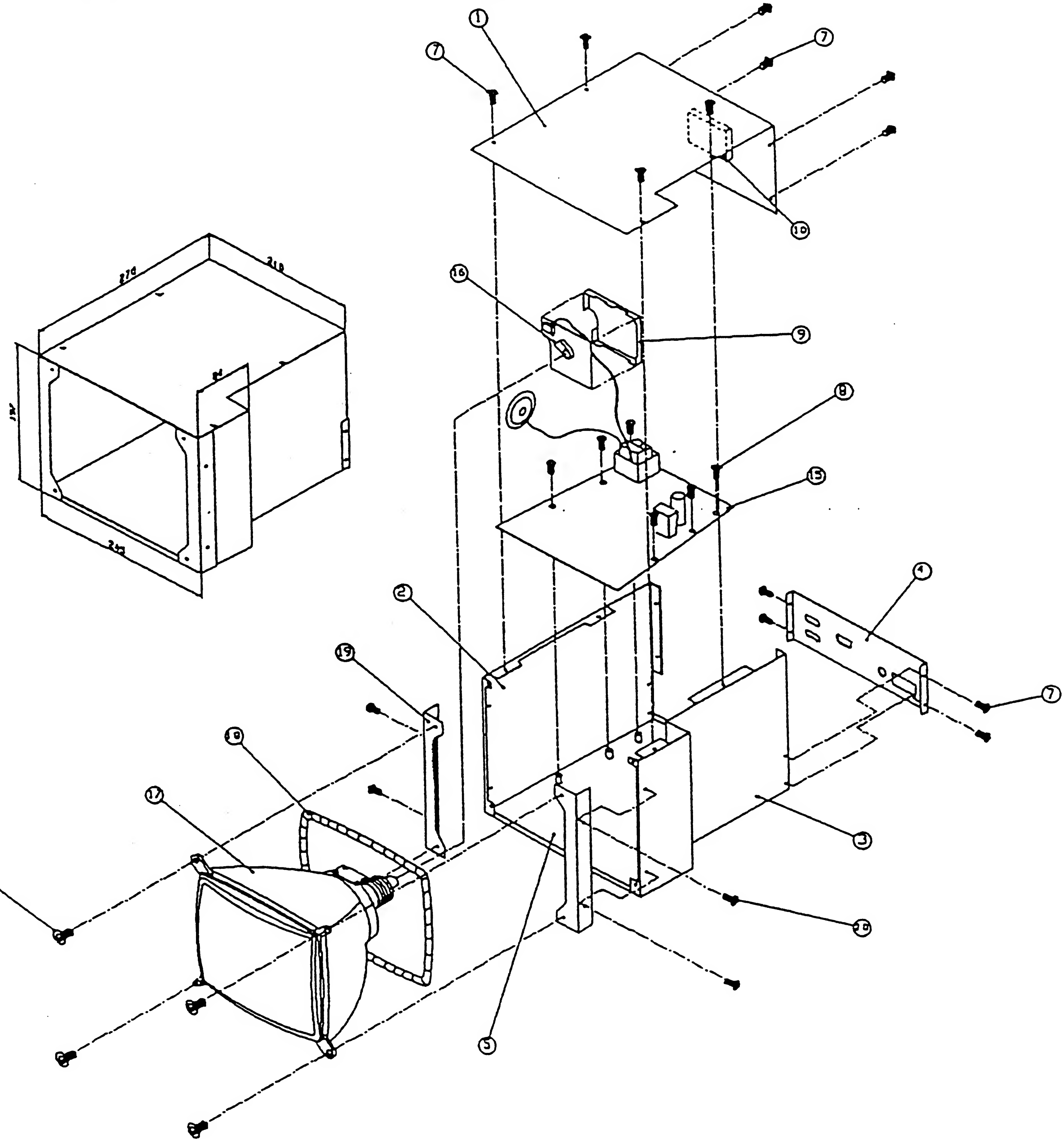


Figure 8-11 : CD9600 Monitor Assembly

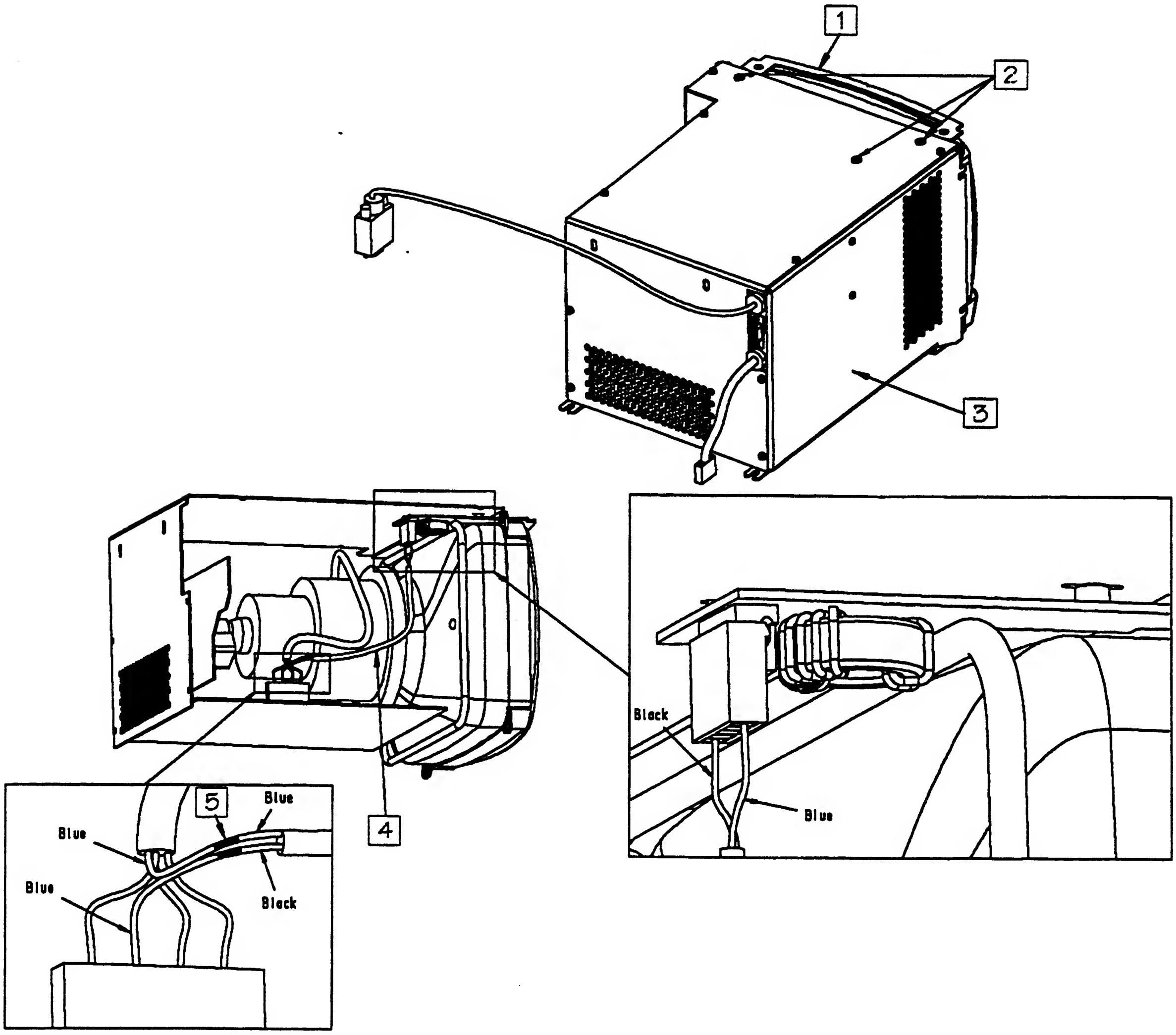


Figure 8-12 : CD9610 Monitor Assembly

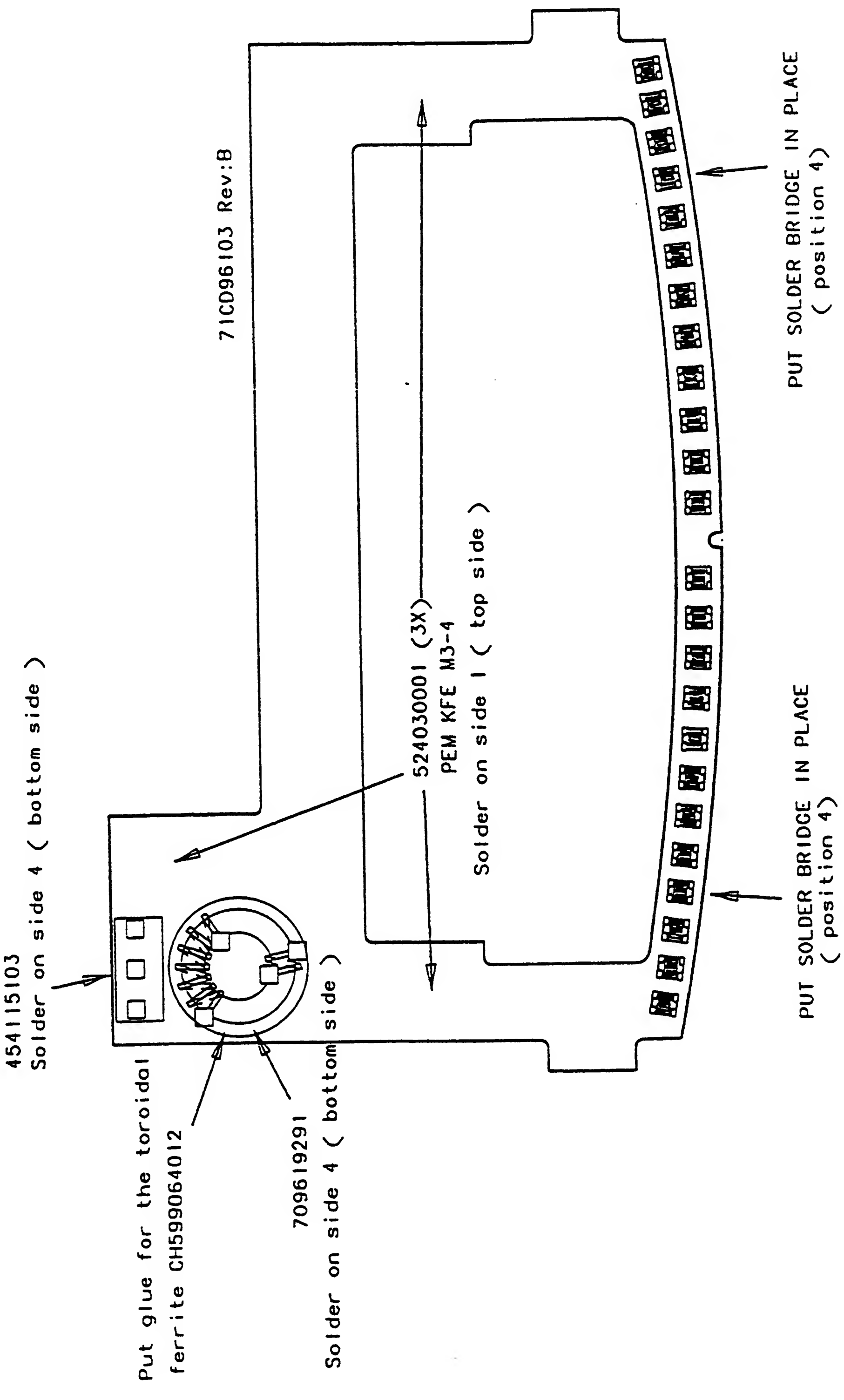

454115103
Solder on side 4 (bottom side)
Put glue for the toroidal
ferrite CH599064012
709619291
Solder on side 4 (bottom side)
524030001 (3X)
PEM KFE M3-4
Solder on side 1 (top side)
71CD96103 Rev:B
PUT SOLDER BRIDGE IN PLACE
(position 4)
PUT SOLDER BRIDGE IN PLACE
(position 4)

Figure 8-13 : CD9610 Magnetic Field Cancellation Coil

LC574A Monitor and Frame Replaceable Parts (Figure 8-10)

Item	LeCroy Part Number	Qty	Description
1	CD9610	1	Color Display Monitor Assembly
2	FP9604	1	Front Panel Assembly
3	550010705	4	Screw eco-fix M4X5 w/Nylock

LC574A Monitor and Frame Replaceable Parts (Figure 8-11)

Item	Part Number	Qty	Description
1	30150160126	1	Top Cover
2	30150161122	1	Left Cover
3	30150161129	1	Right Cover
4	30150161124	1	Rear Cover
5	30150171128	1	Base Assembly
6	3SM4010CCF3	4	Screw M4X10
7	3SM4008WBB2	12	Screw M4X8
8	3SM3006WBS1	6	Screw M3X6
9	30150168127	1	CRT PWB Bracket
10	30181069119	1	Foam
15	393T35M1002	1	Main board
16	393T35C1007	1	CRT Board
17	33311000247	1	CRT 10 "
18	36080111538	1	Degaussing
19	30150165128	2	CRT Holder
20	3SM4008WBB2	4	Screw M4X8

CD9610 Color Monitor Replaceable Parts (Figure 8-12)

Item	LeCroy Part Number	Qty	Description
1	CD9610-2	1	Magnetic Coil
2	550010706	3	Screw eco-fix M3X6
3	CD9600	1	Color Display Monitor Assembly
4	781010018	1	Cable Assembly
5	595603218	2	Heat Shrink Sleeving

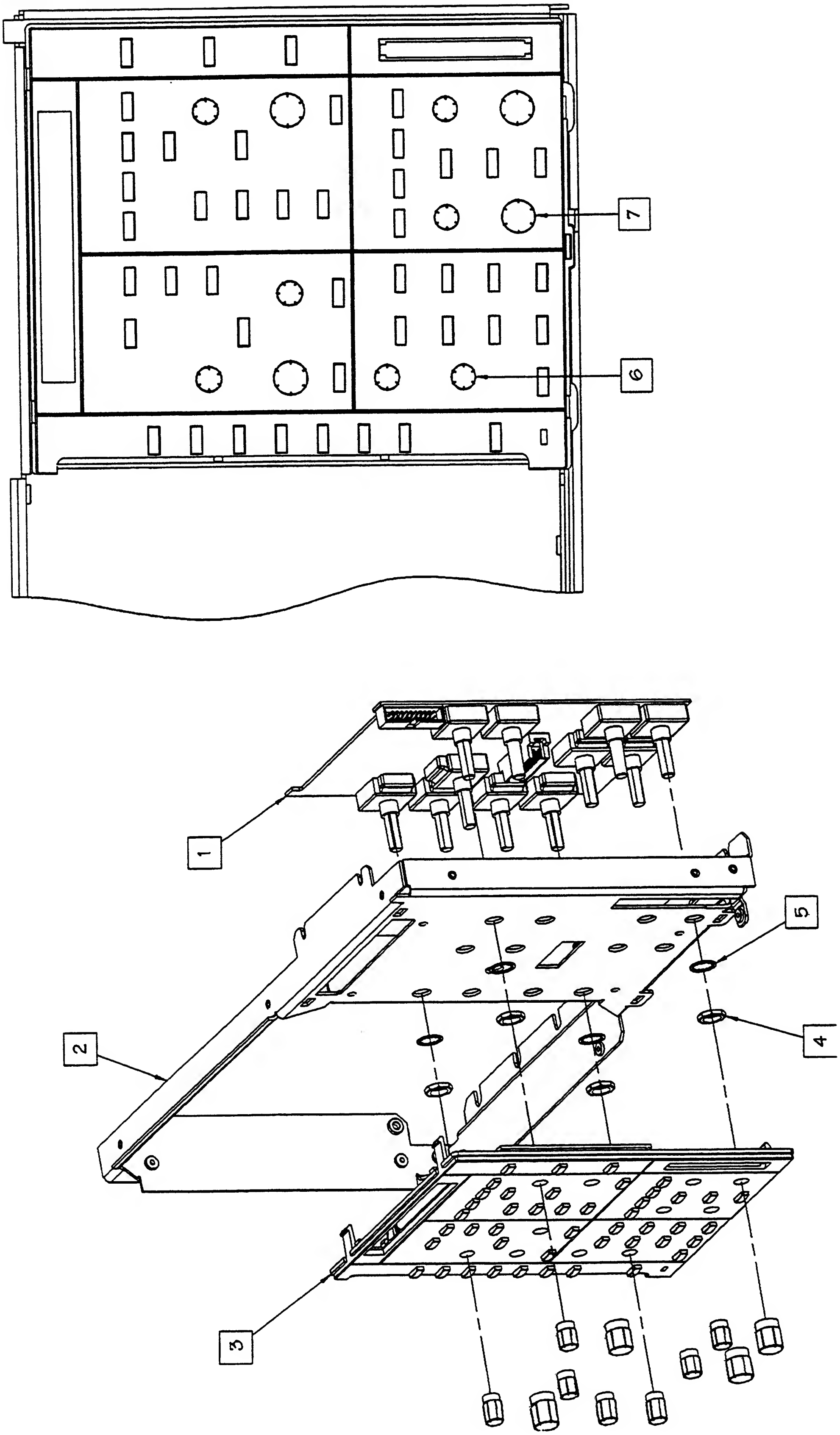


Figure 8-14 : LC574A Front Panel Assembly

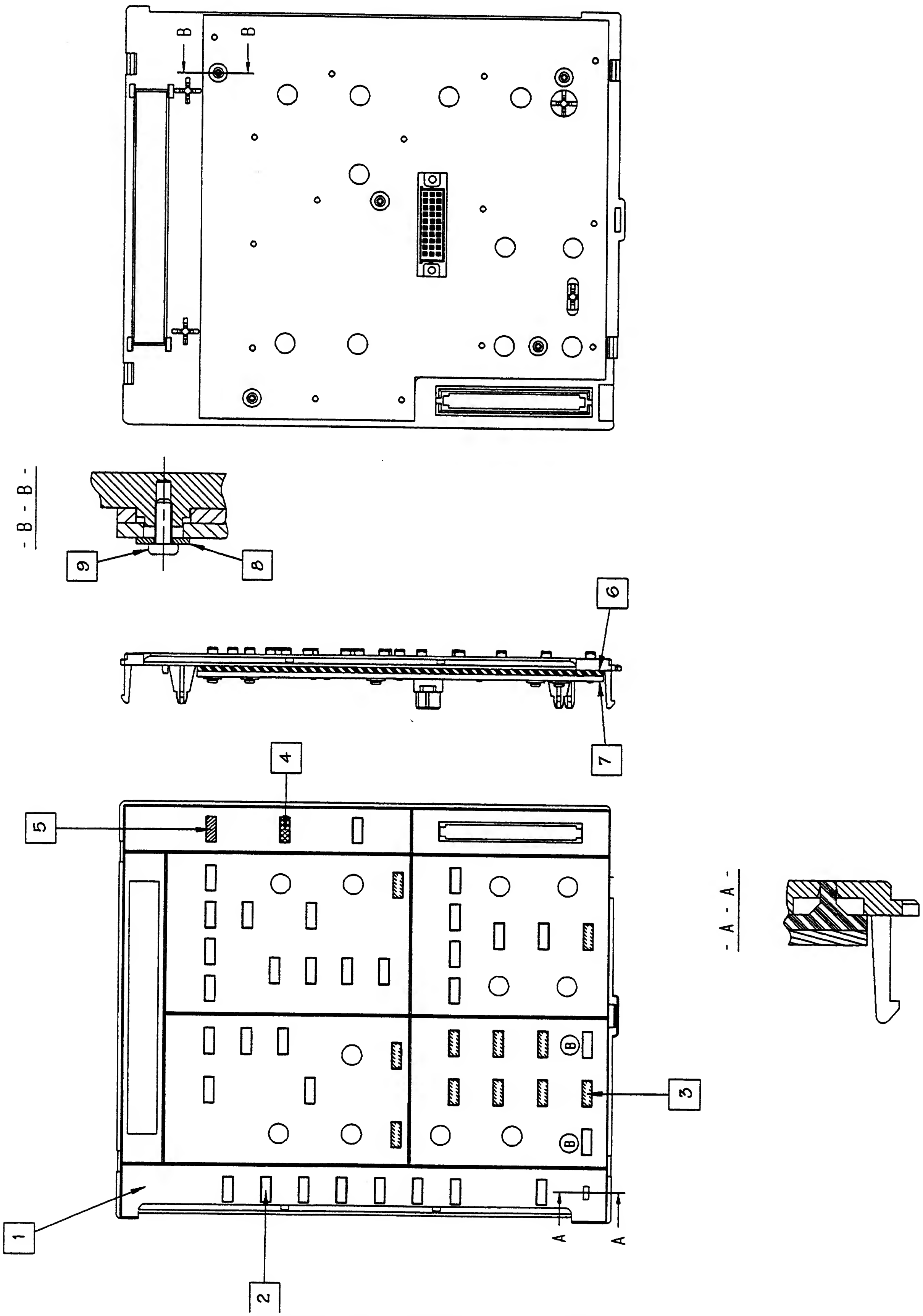


Figure 8-15 : LC574A Keypad Assembly

LC574A Front Panel Replaceable Parts (Figure 8-14)

Item	LeCroy Part Number	Qty	Description
1	F9604-5	1	Quad Channel Front Panel
2	709600030	1	Front Frame
3	F9602-5	1	Keypad Front Panel
4	552090075	4	Mounting Nut M9X0.75
5	551090001	4	Lockwasher M9
6	709600560	7	Knob diam 9
7	709600570	4	Knob diam 12

LC574A Keypad Replaceable Parts (Figure 8-15)

Item	LeCroy Part Number	Qty	Description
1	709600534	1	Front Panel Plate
2	709960510	32	Switch Cap, Light Grey
3	709600512	11	Switch Cap, Dark Grey
4	709600516	1	Switch Cap, Green
5	709600514	1	Switch Cap, Blue
6	709600550	1	Rubber Mat
7	S9602-5	1	PCB Assembly
8	551423100	5	Flat Washer M2.3
9	554422005	5	Screw Self Tapping KA22X6

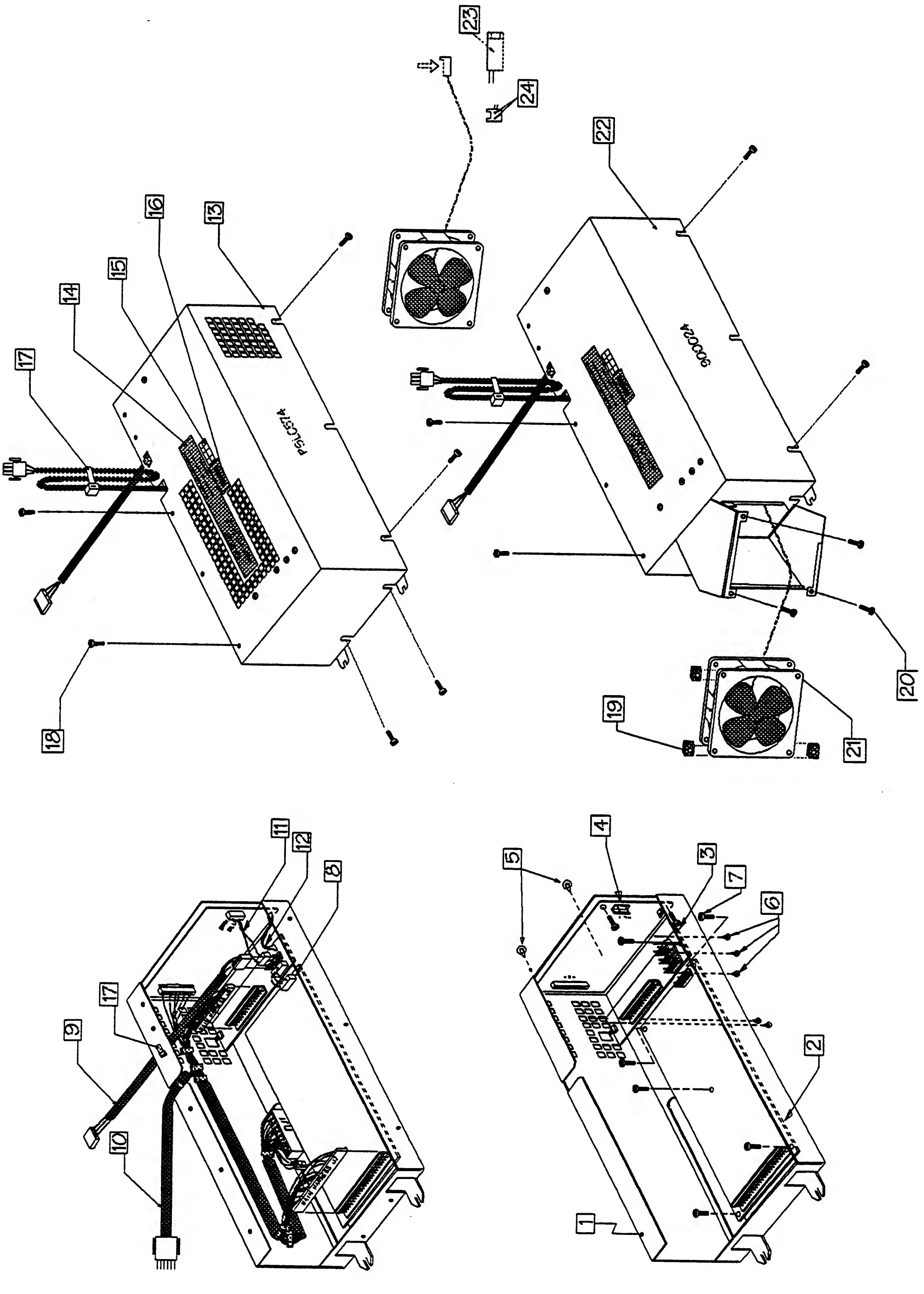


Figure 8-16 : LC574A Power Supply Assembly

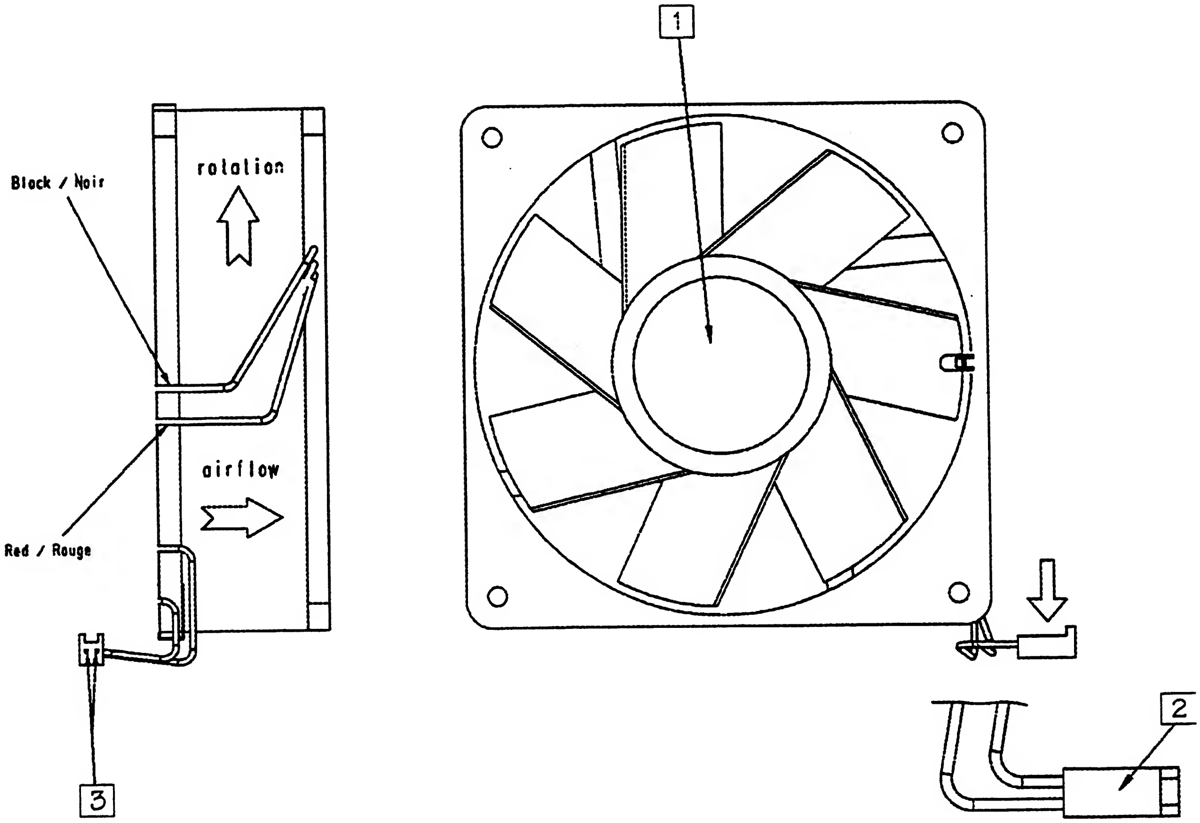


Figure 8-17 : LC574A Fan Assembly

LC574A Power Supply Replaceable Parts (Figure 8-16)

Item	LeCroy Part Number	Qty	Description
1	705740003	1	Power Supply Chassis
2	935X-PS1225	1	Power Supply Ps1724
3	PSLC574-2	1	Line Trig Card &3.3v Dc-Dc Conv P/S
4	315116045	1	45w Power Supply -2v +/-6v
5	520001006	2	Lockin Nylon P.C.Board Support
6	520014124	6	Locking Nylon Pcb Standoff
7	550010108	7	Screw Pan Head Phil M3x8 W/Nylock
8	785740001	1	Cable Pslc574-2 To Psi 1724
9	785740002	1	Cable Pslc574-2 To Rear Pnl Al Cabl
10	705740008	1	Cable Harness For Pslc574-2
11	789384002	1	-2v Supply Line Cable
12	780834509	1	Ground Cable Yellow/Green 9cm
14	377051005	1	Label "Danger -----Only"
15	377141000	1	Label Matrix Adhesive Paper
16	377900001	1	Label Barcode 0.25" X 1.50"
17	594120001	4	Tiewrap
18	550010706	4	Screw Eco-Fix Phil Pan M3x6 W/Nyloc
19	554035101	3	Clip-On Nut Diam. 3.5
20	554440001	3	Screw S/Tap Pan Phil Ka40x12
21	530409406	1	Fan Axial 12v 3.1w 43 Cfm
22	705740020	1	900024 Power Supply Cover
23	455011002	2	Contact (Crimp) Male
24	455110002	1	Block For Male Pins 2 Pos
25	235010005	1	Diode Rectifier 1n4005

LC574A Fan Replaceable Parts (Figure 8-17)

Item	LeCroy Part Number	Qty	Description
1	530409212 (used with unit with 900024 Power supply)	1	Fan Axial 12V 1" Thick 2.4W
1	530409006 (used with unit with PSLC574 power supply)	1	Fan Axial 12 V
2	405154002	1	Connector Housing 2 Pos
3	405708001	2	Terminal anti-fishhook crimp

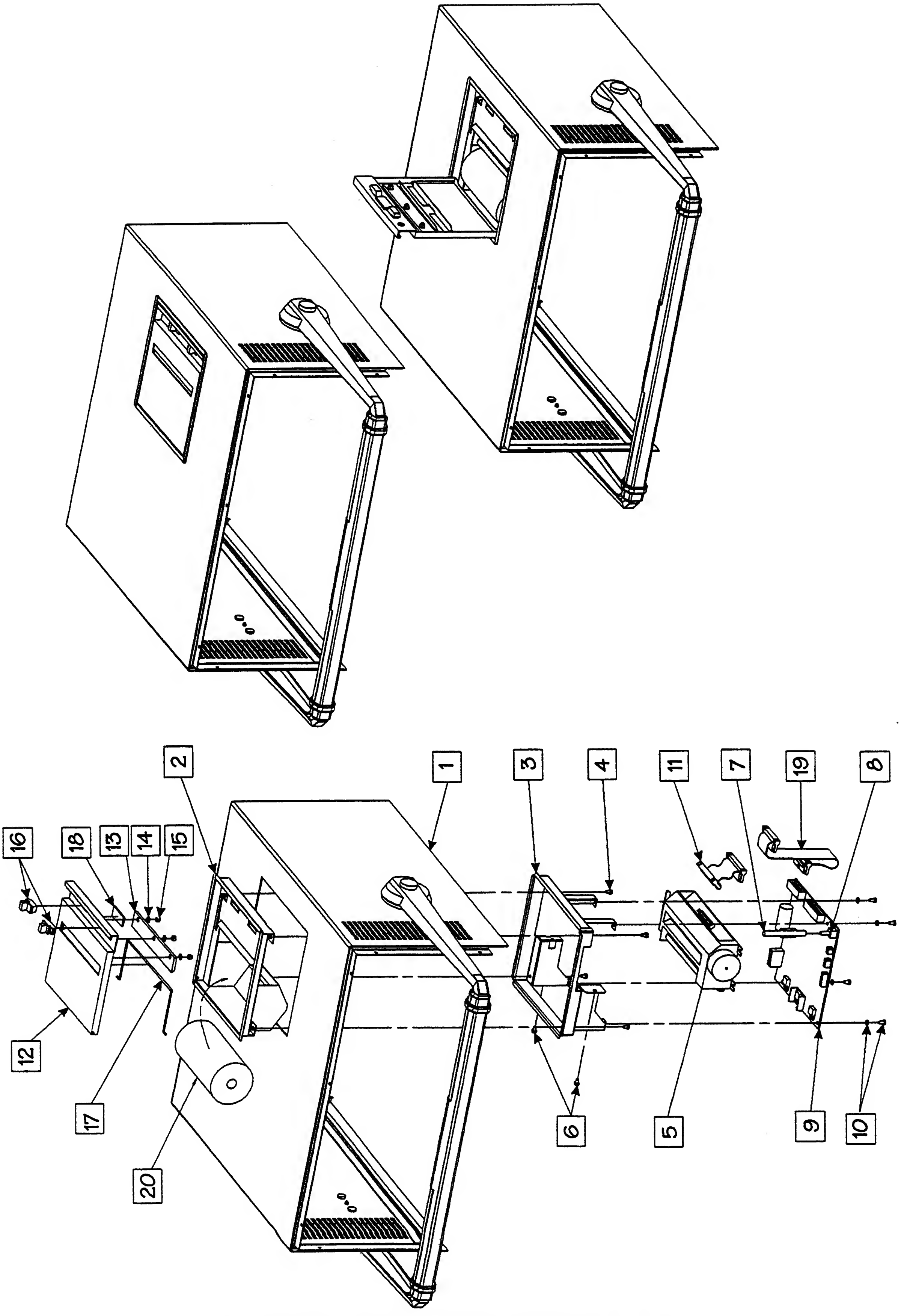


Figure 8-18 : LC574A Graphic Printer Assembly

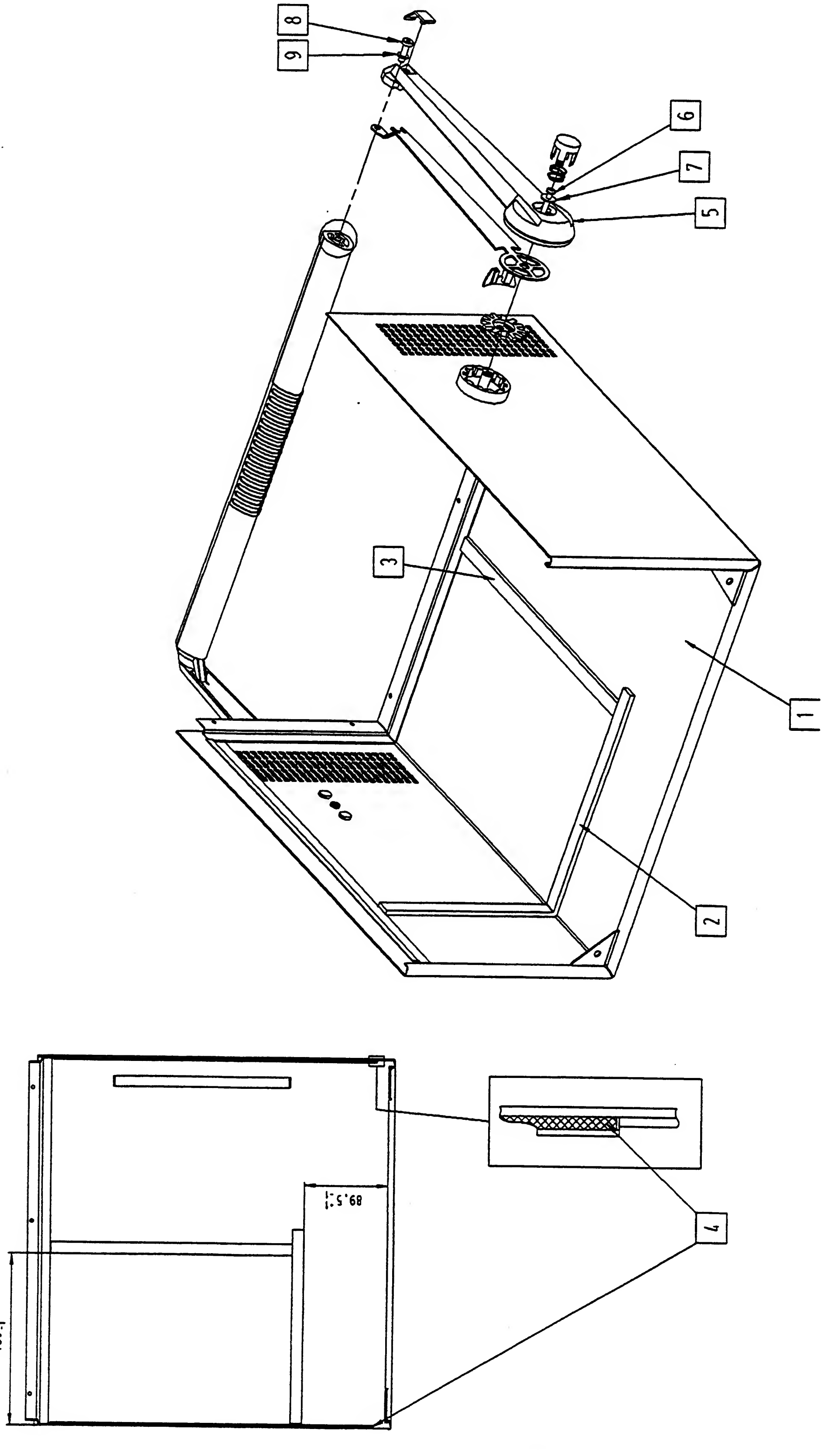


Figure 8-19 : LC574A Upper Cover Assembly

LC574A Graphic Printer Replaceable Parts (Figure 8-18)

Item	LeCroy Part Number	Qty	Description
1	709601010	1	GP01 Upper Cover Assembly
2	BOX-GP01	1	Graphic Printer Box
3	709601020	1	Graphic Printer Frame
4	550010105	4	Screw pan hd phil M3X5 w/Nylock
5	334000832	1	Thermal Printer
6	550010105	2	Screw pan hd phil M3X5 w/Nylock
7	709450523	1	Push Switch Extender
8	70GP01061	1	Printer Switch Button
9	F9300-7	1	Printer controller
10	550010106	4	Screw pan hd phil M3X6 w/Nylock
10	551430400	4	Washer Shockproof M3
11	780791604	1	Flat cable 2X13 (4cm)
12	Cover-GP01	1	Graphic Printer cover
13	70GP01051	1	Graphic Printer cutter
14	551430100	3	Flat Washer M3
15	552430300	3	Nut open end acorn M3
16	530040005	2	Slide Latch tab style
17	70GP01041	1	Graphic Printer cover axle
18	389340008	3	Auto adhesive rubber band 12X2 mm
19	780721022	1	Flat cable 2X10 (22 cm)
20	334000402	1	Thermal Paper for Seiko Printer

LC574A Upper Cover Replaceable Parts (Figure 8-19)

Item	LeCroy Part Number	Qty	Description
1	709600040	1	Upper Cover
2	380450012	1	NR adhesive tape 4X12 mm, length 370 mm
3	380450012	1	NR adhesive tape 4X12 mm, length 358 mm
4	350920024	2	Monel mesh strip diam 2.4 mm
5	709600090	1	Tip-up Carrying Handle
6	550440120	2	Screw pan hd phil M4X20 w/Nylock
7	709600090 kit	2	Flat Washer M4
8	709600090 kit	2	Socket head Screw M5X16 Loctite Coated
9	709600090 kit	2	Washer M5
10			

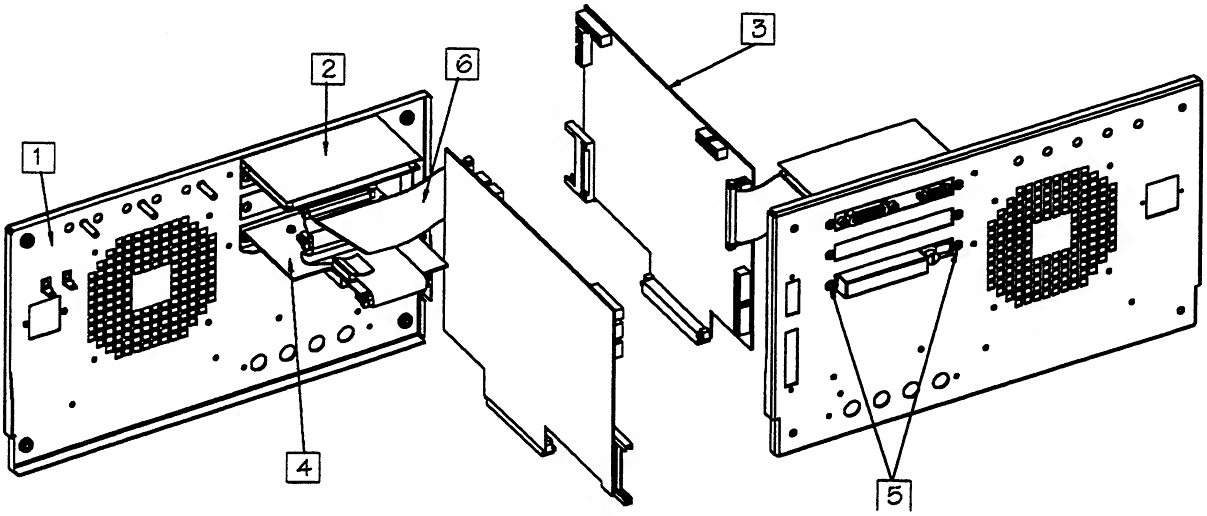


Figure 8-20 : LC574A Hard Disk Assembly

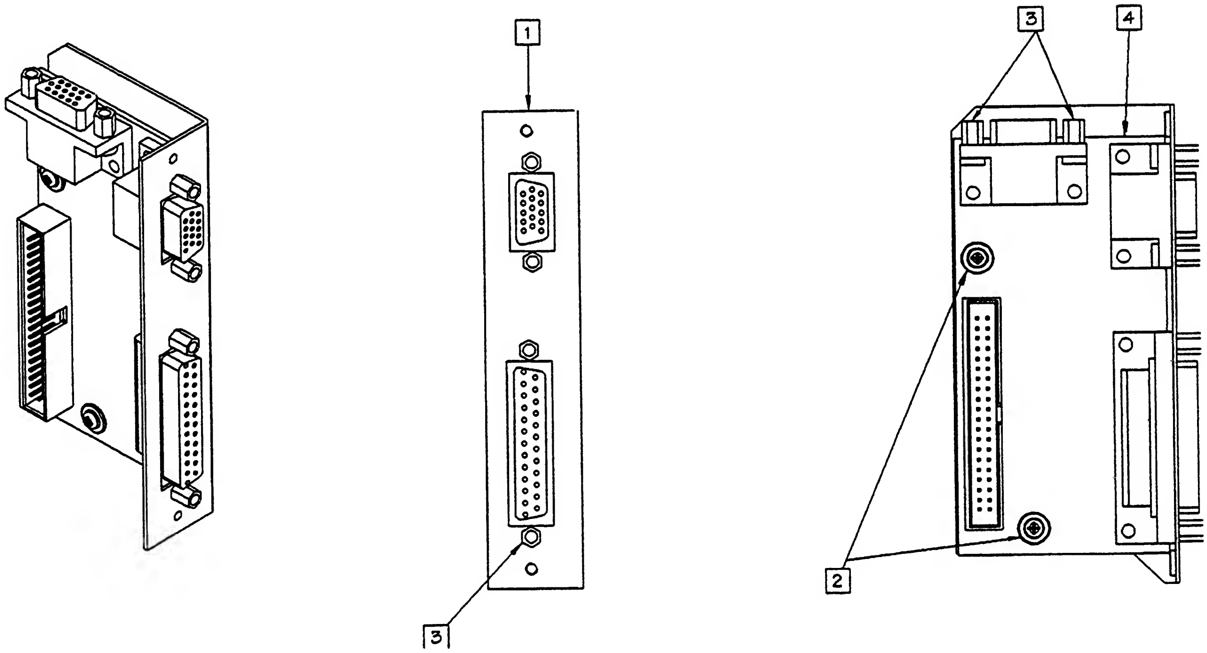


Figure 8-21 : LC574A Centronics & VGA Interface Assembly

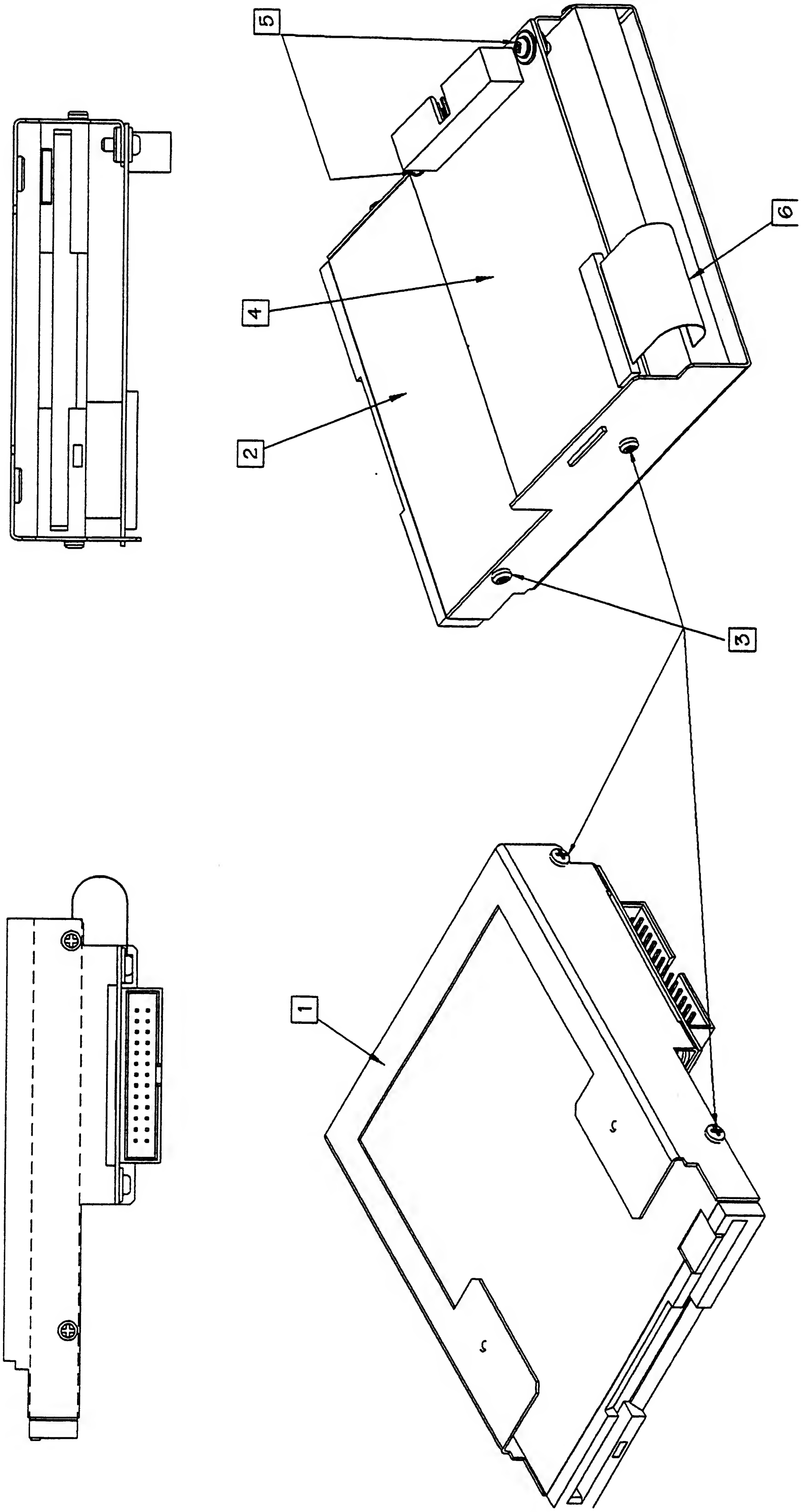


Figure 8-22 : LC574A Floppy Disk Assembly

LC574A Hard Disk Replaceable Parts (Figure 8-20)

Item	LeCroy Part Number	Qty	Description
1	RP9602-9	1	Rear Panel
2	F9300-4	1	GPIB & RS232 Interface
3	F9601-1-X	1	Processor Card
4	LCXXX-HD01	1	PCMCIA III Controller Assembly
5	550010706	2	Screw eco-fix M3X6 w/Nylock
6	780891032	1	Flat cable 2X20 (4 connect)

LC574A Centronics & VGA Replaceable Parts (Figure 8-21)

Item	LeCroy Part Number	Qty	Description
1	709601211	1	Bracket
2	550010706	2	Screw eco-fix M3X5 w/Nylock
3	405204000	6	Mounting hdw for conn.shell
4	F9601-2	1	Centronics & VGA Card

LC574A Floppy Replaceable Parts (Figure 8-22)

Item	LeCroy Part Number	Qty	Description
1	709600611	1	Floppy Drive support
2	330000002	1	Floppy Disk Drive 3.5”
3	550010103	4	Screw cyl hd phil M2.5X3 w/Nylock
4	S9601-6	1	Interface Card
5	550010706	2	Screw eco-fix M3X6 w/Nylock

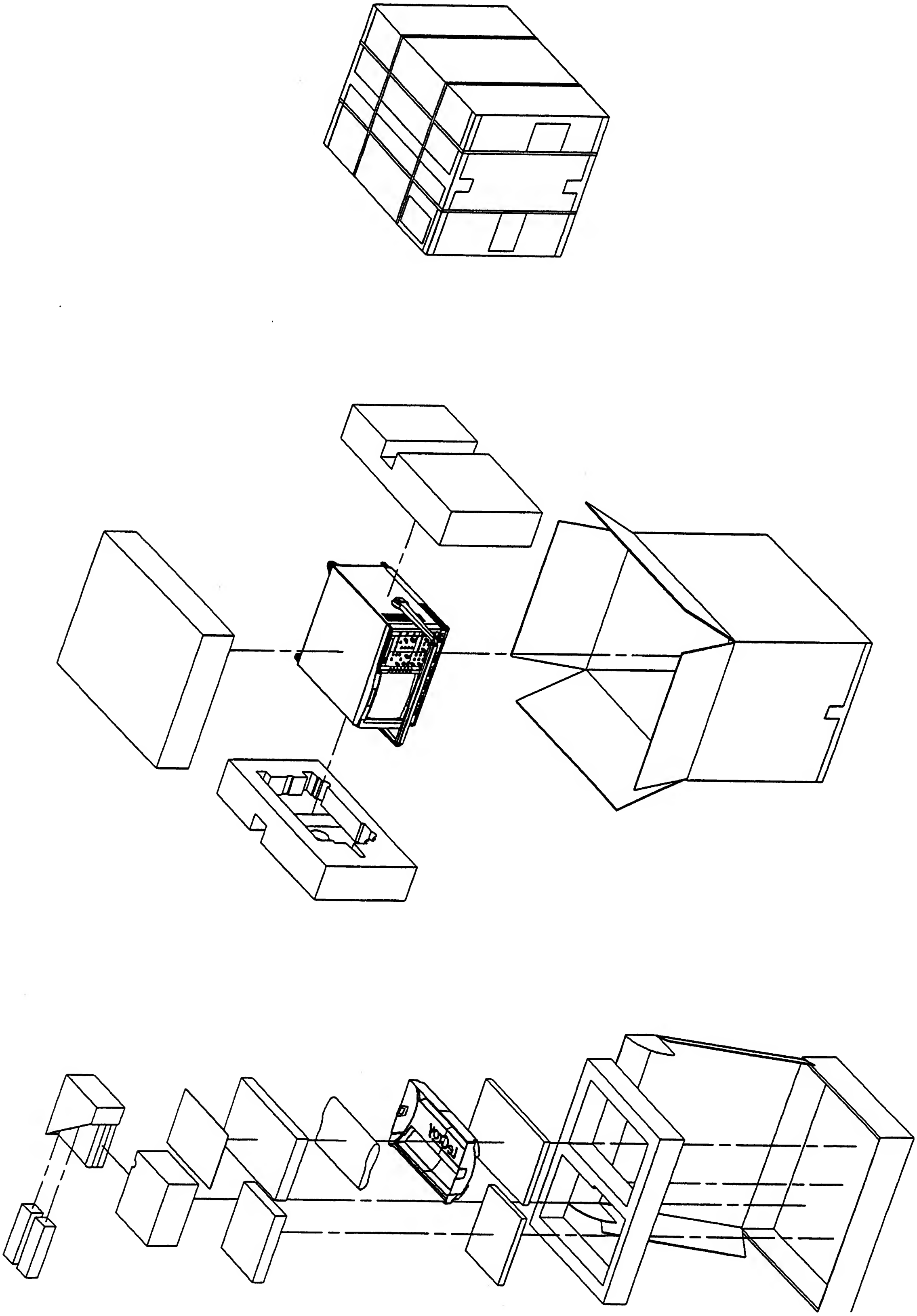


Figure 8-23 : LC574A Packaging Assembly

9. Schematics, Layouts, Parts List

This chapter contains the following schematics, layouts and parts list :

F9601-1-X Processor

9484M-2 Acquisition Memory

9384MEM-2 Acquisition Memory

F9601-2 Centronics and VGA Interface

F9384-31 Main Acquisition Card

F9300-4 GPIB & RS232 Interface

F9354-4 Time Base

F9602-5 Front Panel Keypad

F9604-5 Front Panel

F9601-6 Floppy Disk Interface

F9300-7 Printer Controller

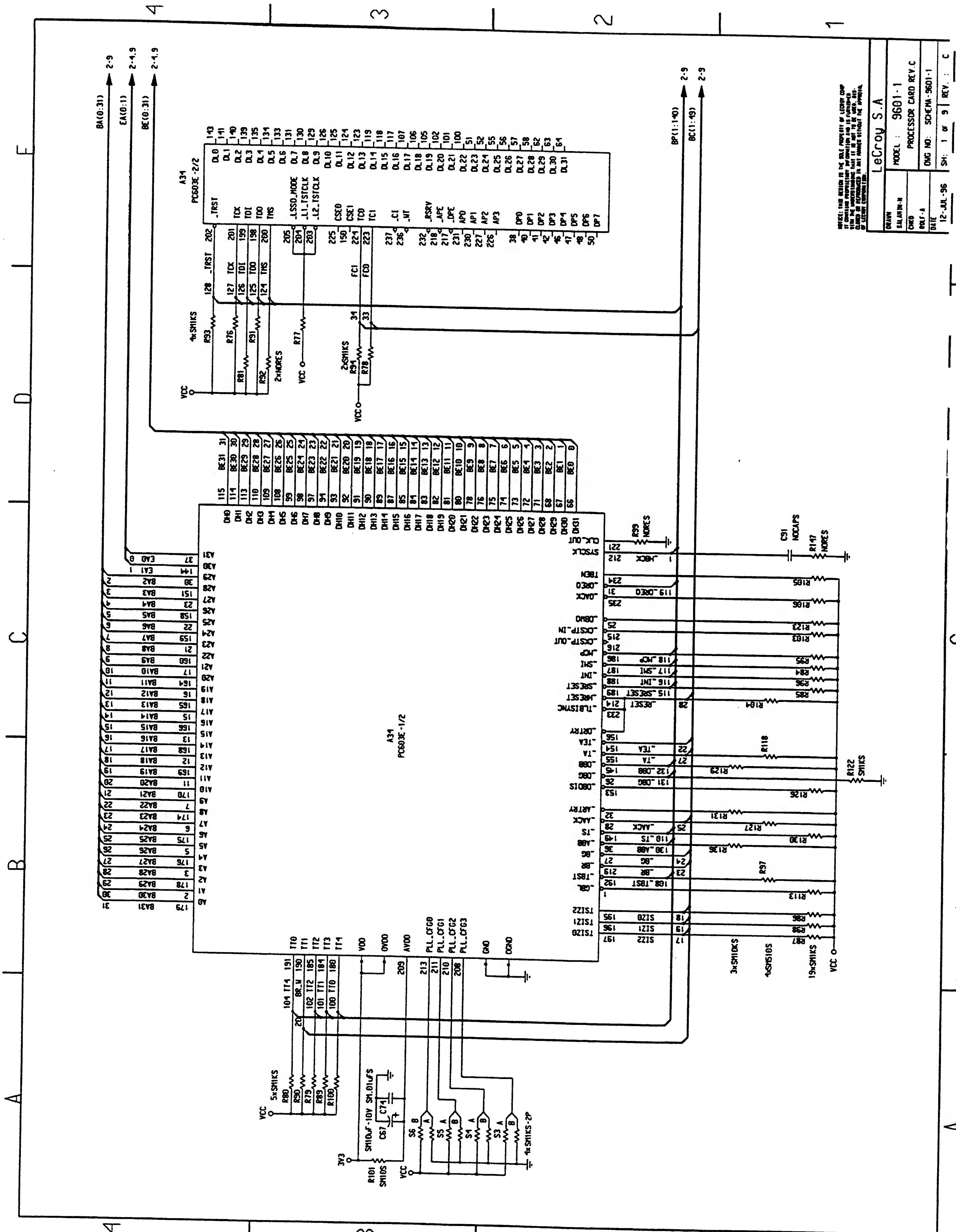
F9300-8 Hard Disk Interface

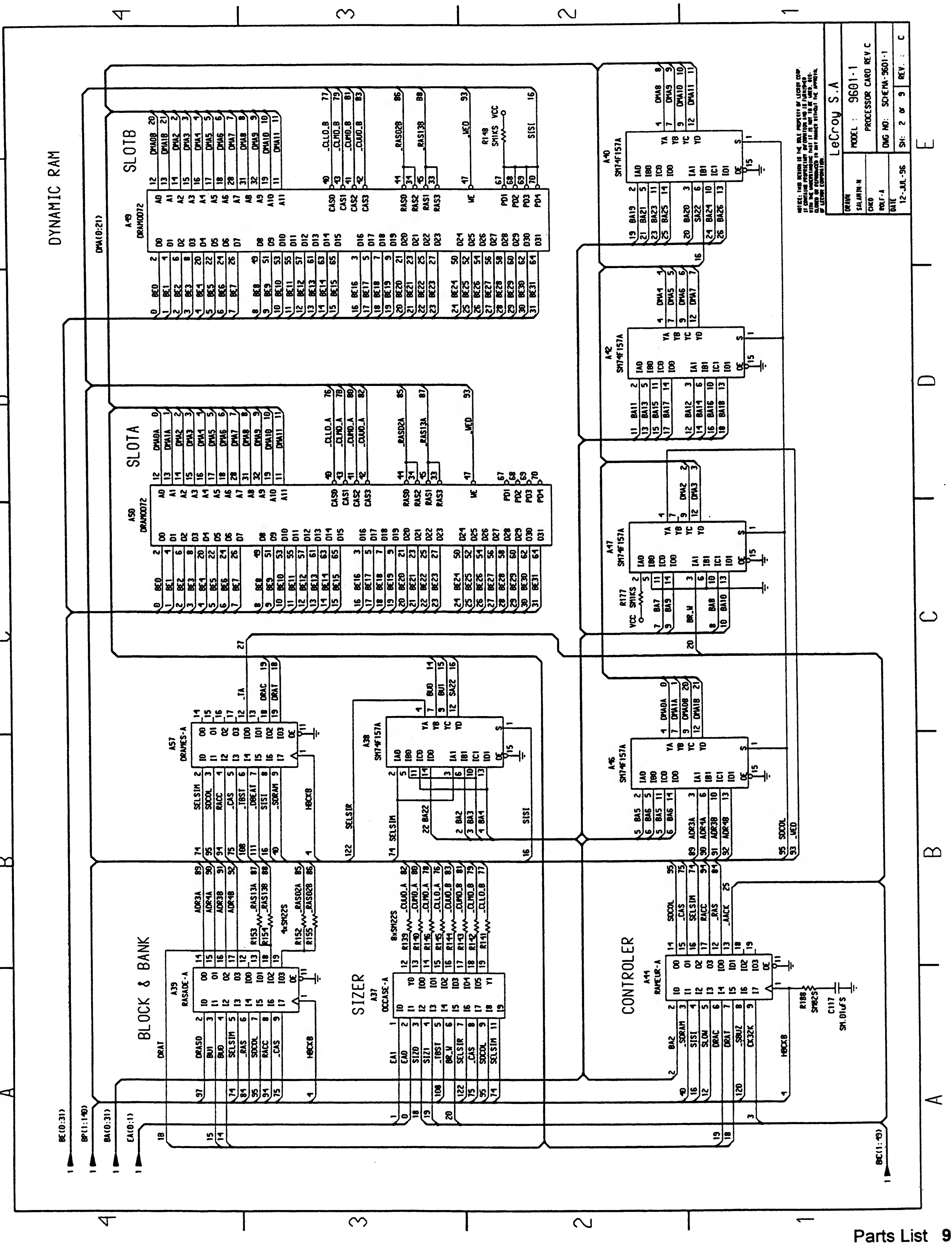
PS9651 Power Supply (PS1724) Diagram

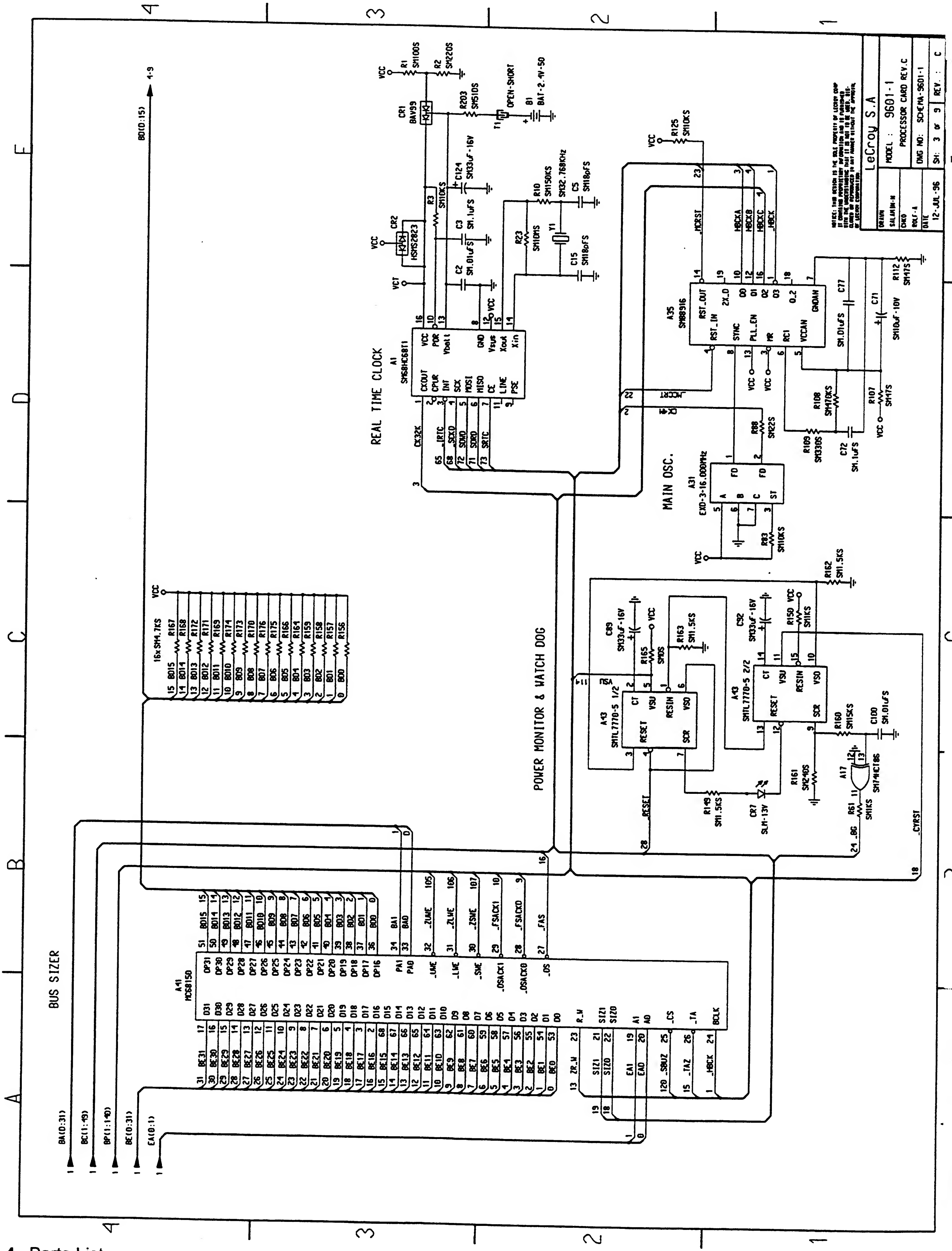
PSLC574-2 -2v Power Supply and Line Trigger Card

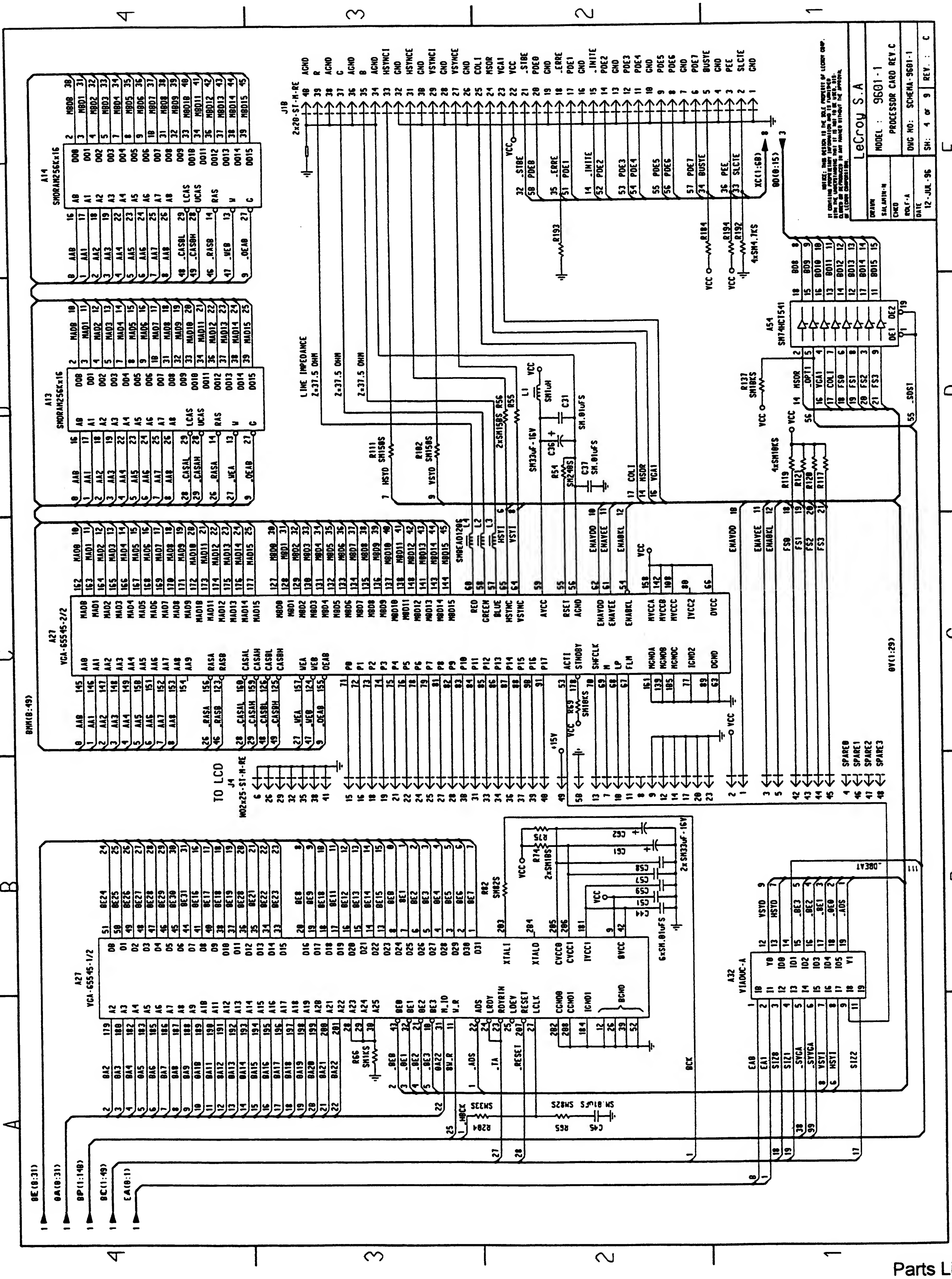
CD9610 Color Display

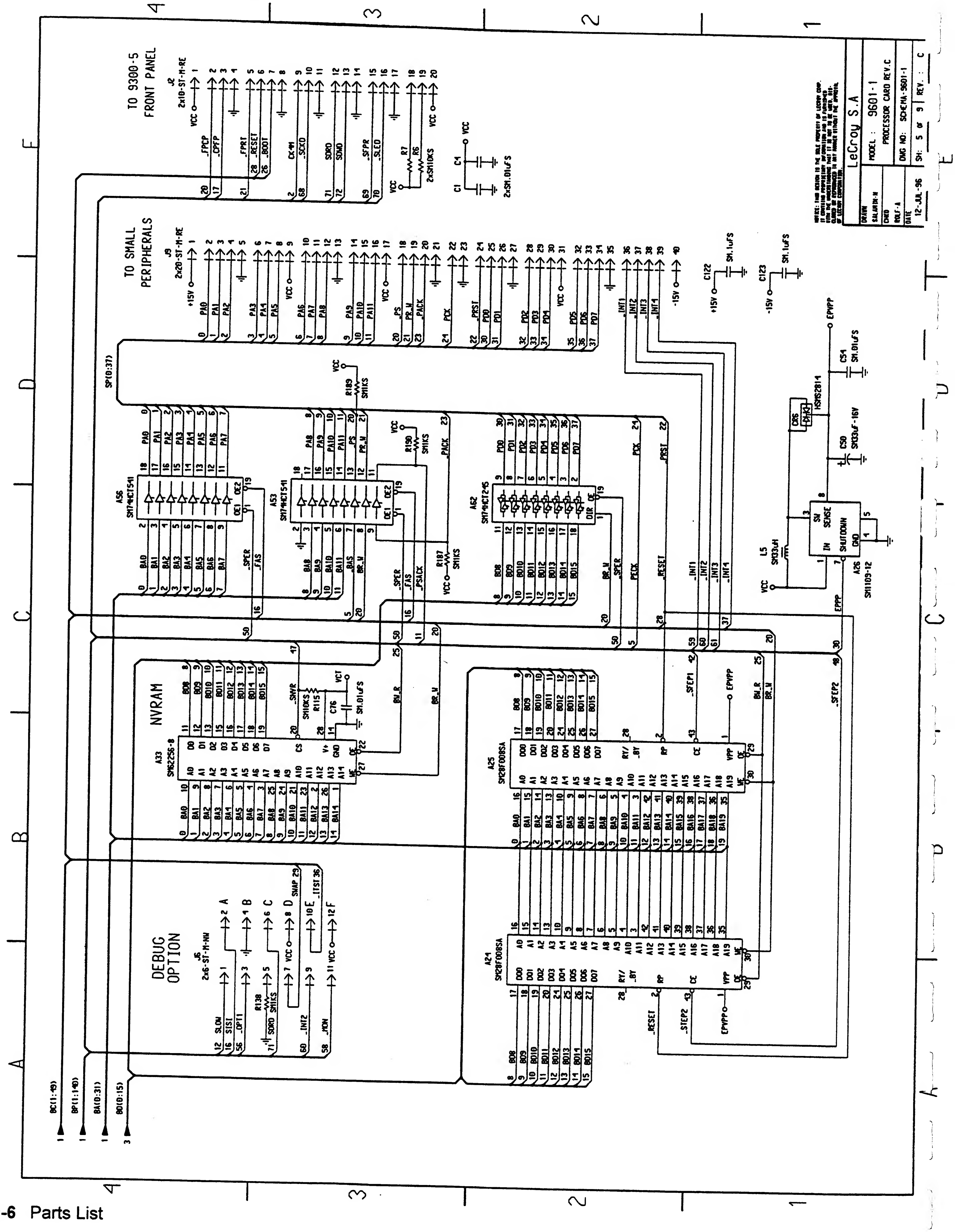
Schematics, Layouts

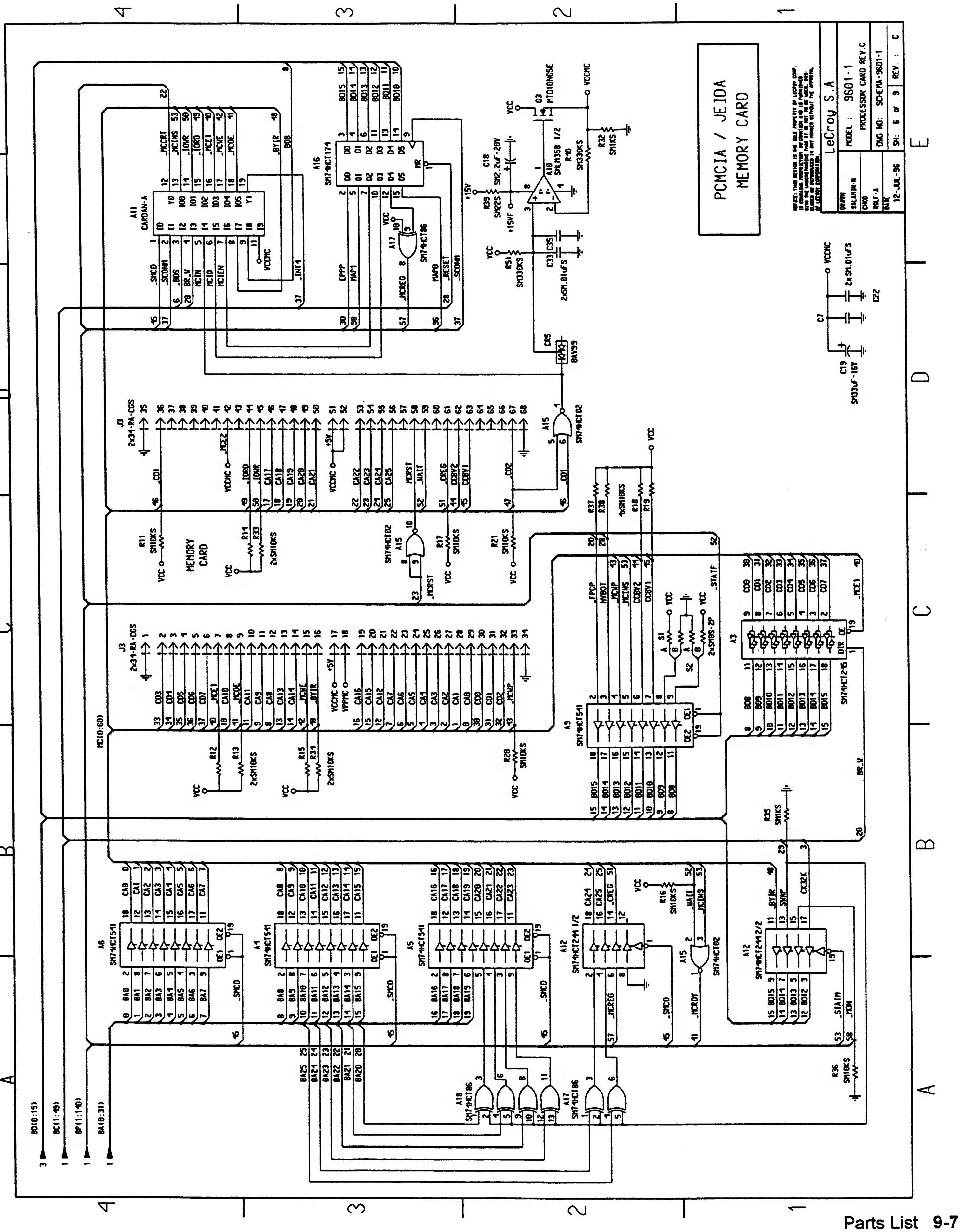


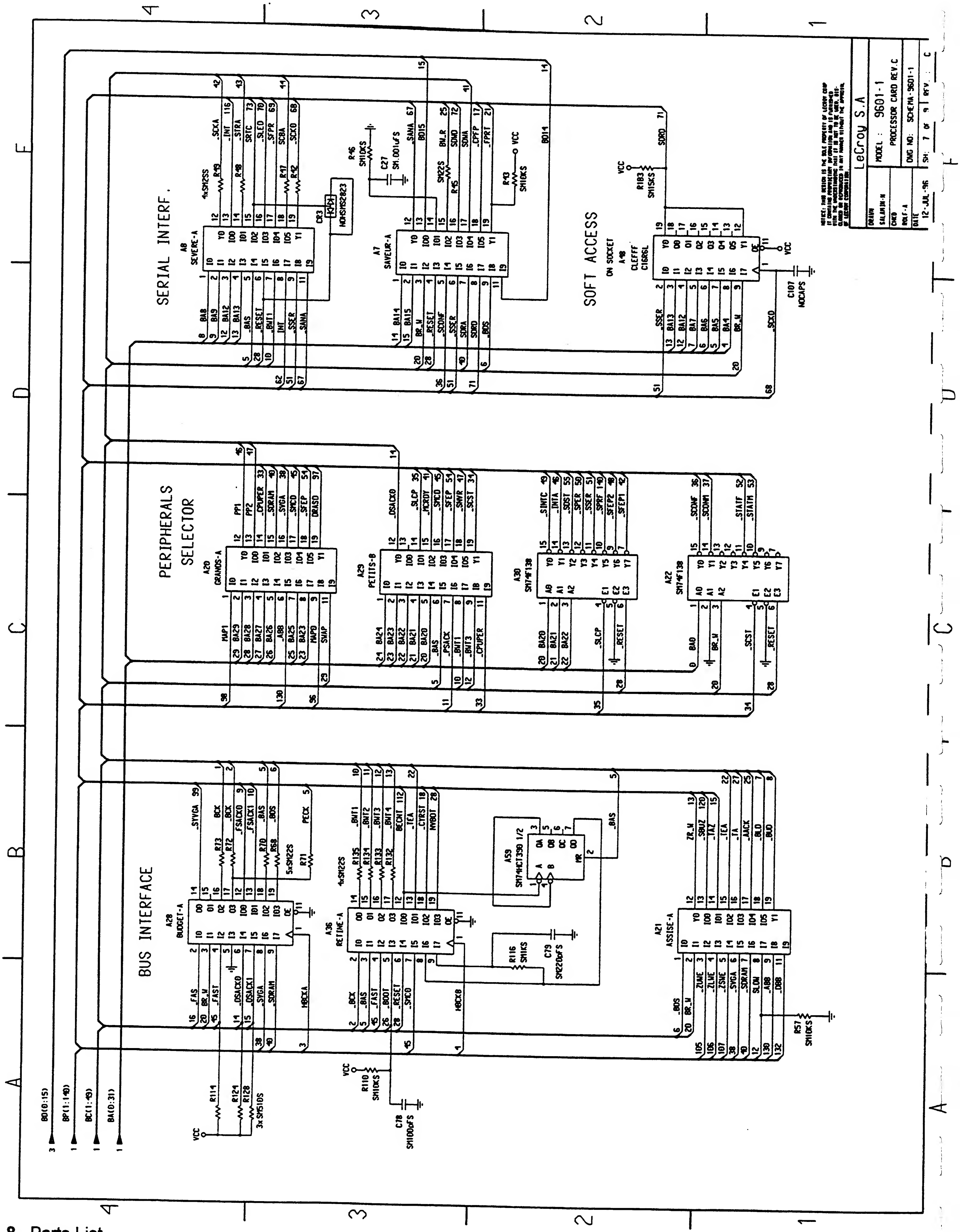

DYNAMIC RAM
SLOTB
SLOTA
A49 DRAMOD72
A50 DRAMOD72
DMA(0:21)
BLOCK & BANK
A57 DRAMES-A
A39 RASADE-A
SIZER
A38 SM74F157A
A37 OCCASE-A
CONTROLER
A44 RAMEUR-A
A40 SM74F157A
A42 SM74F157A
A47 SM74F157A
A46 SM74F157A
BE(0:31)
BP(1:40)
BA(0:31)
EA(0:1)
BC(1:49)
LeCroy S.A
MODEL : 9601-1
PROCESSOR CARD REV.C
DWG NO: SCHEMA-9601-1
SH: 2 of 9
REV. : C
DRAWN SALAMIN-N
CHKD
ROLF-A
DATE 12-JUL-96
A B C D E
1 2 3 4


LeCroy S.A
MODEL : 9601-1
PROCESSOR CARD REV.C
DWG NO: SCHEMA-9601-1
SH: 3 OF 9
REV. : C
DRAWN SALAMIN-N
CHKD ROLF-A
DATE 12-JUL-96
REAL TIME CLOCK
A1 SM68HC68T1
MAIN OSC.
A31 EXO-3-16.000MHz
A35 SM88916
POWER MONITOR & WATCH DOG
A43 SMTL7770-5 1/2
A43 SMTL7770-5 2/2
A17 SM74HC86
BUS SIZER
A41 MC68150
BD(0:15)
BA(0:31)
BC(1:49)
BP(1:140)
BE(0:31)
EA(0:1)
16xSM4.7KS


LeCroy S.A
MODEL : 9601-1
PROCESSOR CARD REV.C
DWG NO: SCHEMA-9601-1
SH: 4 OF 9
REV. : C
DRAWN SALAMIN-M
CHKD ROLF-A
DATE 12-JUL-96
NOTICE: THIS DESIGN IS THE SOLE PROPERTY OF LECROY CORP. IT CONTAINS PROPRIETARY INFORMATION AND IS FURNISHED WITH THE UNDERSTANDING THAT IT IS NOT TO BE USED, DISCLOSED OR REPRODUCED IN ANY MANNER WITHOUT THE APPROVAL OF LECROY CORPORATION.
A14 SMDRAM256Kx16
A13 SMDRAM256Kx16
A27 VGA-65545-2/2
A27 VGA-65545-1/2
A54 SM74HC7541
A32 V1ADUC-A
J10 2x20-ST-M-RE
J4 M02x25-ST-M-RE
TO LCD
LINE IMPEDANCE 2x37.5 OHM
2x37.5 OHM
2x37.5 OHM
BMM(0:49)
BE(0:31)
BA(0:31)
BP(1:140)
BC(1:49)
EA(0:1)
XC(1:60)
BD(0:15)
BV(1:29)
1
2
3
4
A
B
C
D
E


TO 9300-5 FRONT PANEL
J2 2x10-ST-M-RE
TO SMALL PERIPHERALS
J9 2x20-ST-M-RE
SP(0:37)
A56 SM74HCT541
A53 SM74HCT541
A62 SM74HCT245
NVRAM
A33 SM62256-8
A25 SM28F008SA
A24 SM28F008SA
DEBUG OPTION
J6 2x6-ST-M-NN
A26 SM1109-12
L5 SM33uH
CR6 HSMS2814
C50 SM33uF-16V
C54 SM.01uFS
C122 SM.1uFS
C123 SM.1uFS
C1 C4 2xSM.01uFS
R7 R6 2xSM10KS
R189 SM1KS
R190 SM1KS
R187 SM1KS
R115 SM1KS
C76 SM.01uFS
R138 SM1KS
BC(1:49)
BP(1:140)
BA(0:31)
BD(0:15)
LeCroy S.A
MODEL : 9601-1
PROCESSOR CARD REV.C
DWG NO: SCHEMA-9601-1
SH: 5 of 9
REV. : C
DATE 12-JUL-96


PCMCIA / JEIDA
MEMORY CARD
NOTICE: THIS DESIGN IS THE SOLE PROPERTY OF LECROY CORP. IT CONTAINS PROPRIETARY INFORMATION AND IS FURNISHED WITH THE UNDERSTANDING THAT IT IS NOT TO BE USED, DISCLOSED OR REPRODUCED IN ANY MANNER WITHOUT THE APPROVAL OF LECROY CORPORATION.
LeCroy S.A
MODEL : 9601-1
PROCESSOR CARD REV.C
DWG NO: SCHEMA-9601-1
SH: 6 of 9
REV. : C
DRAWN SALAMIN-N
CHKD ROLF-A
DATE 12-JUL-96
A11 CARDAN-A
A16 SM74HCT174
A17 SM74HCT86
A10 SML M358 1/2
D3 MTDIONOSE
CR5 BAV99
C18 SM2.2uF-20V
C19 SM33uF-16V
C7
C22 2xSM.01uFS
C33 C35 2xSM.01uFS
R39 SM22S
R40 SM330KS
R32 SM1KS
R51 SM330KS
J3 2x34-RA-CGS
MEMORY CARD
A15 SM74HCT02
A9 SM74HCT541
A3 SM74HCT245
S1 S2 2xSM0S-2P
R37 R38 R18 R19 4xSM10KS
A6 SM74HCT541
A4 SM74HCT541
A5 SM74HCT541
A12 SM74HCT244 1/2
A12 SM74HCT244 2/2
A18 SM74HCT86
R16 SM10KS
R35 SM1KS
R36 SM10KS
MC(0:60)
BD(0:15)
BC(1:49)
BP(1:140)
BA(0:31)
VCC
VCCMC
+15V
+15VF
+5V
VPPMC
CK32K
_STATF
_MCE1
BR_W
_SMCD
_MCREG
_MCRDY
_STAIM
_MON


SERIAL INTERF.
A8 SEVERE-A
A7 SAVEUR-A
CR3 HDMSMS2823
SOFT ACCESS
ON SOCKET
A48 CLEFF C16R6L
C107 NOCAPS
PERIPHERALS SELECTOR
A20 GRANDS-A
A29 PETITS-B
A30 SN74F138
A22 SN74F138
BUS INTERFACE
A28 BUDGET-A
A36 RETINE-A
A59 SN74HCT390 1/2
A21 ASSISE-A
C78 SM100pFS
C79 SM220pFS
C27 SM.001uFS
R57 SM10KS
R110 SM10KS
R116 SM1KS
R183 SM15KS
R114 R124 R128 3xSM510S
BD(0:15)
BP(1:140)
BC(1:49)
BA(0:31)
VCC
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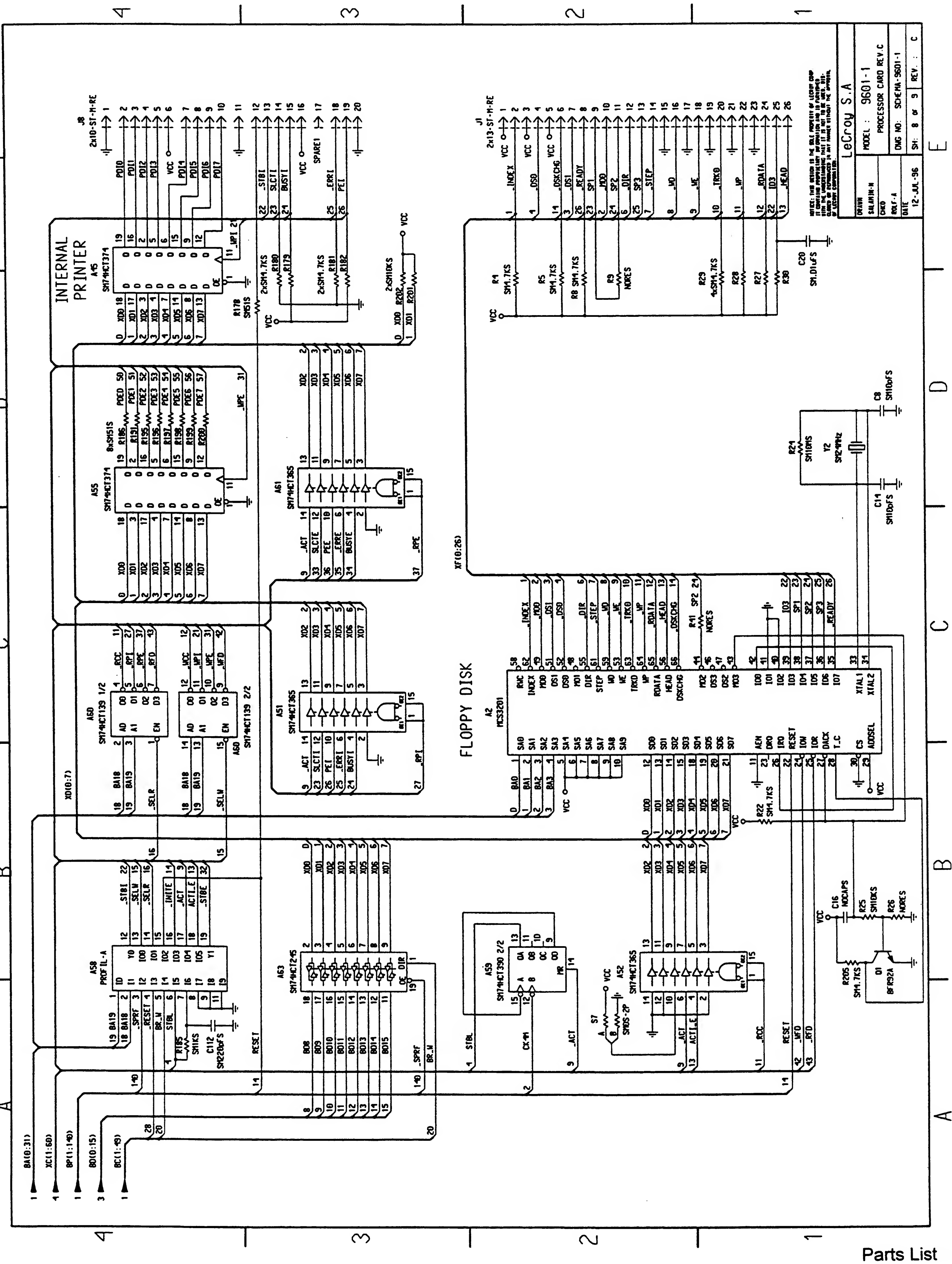
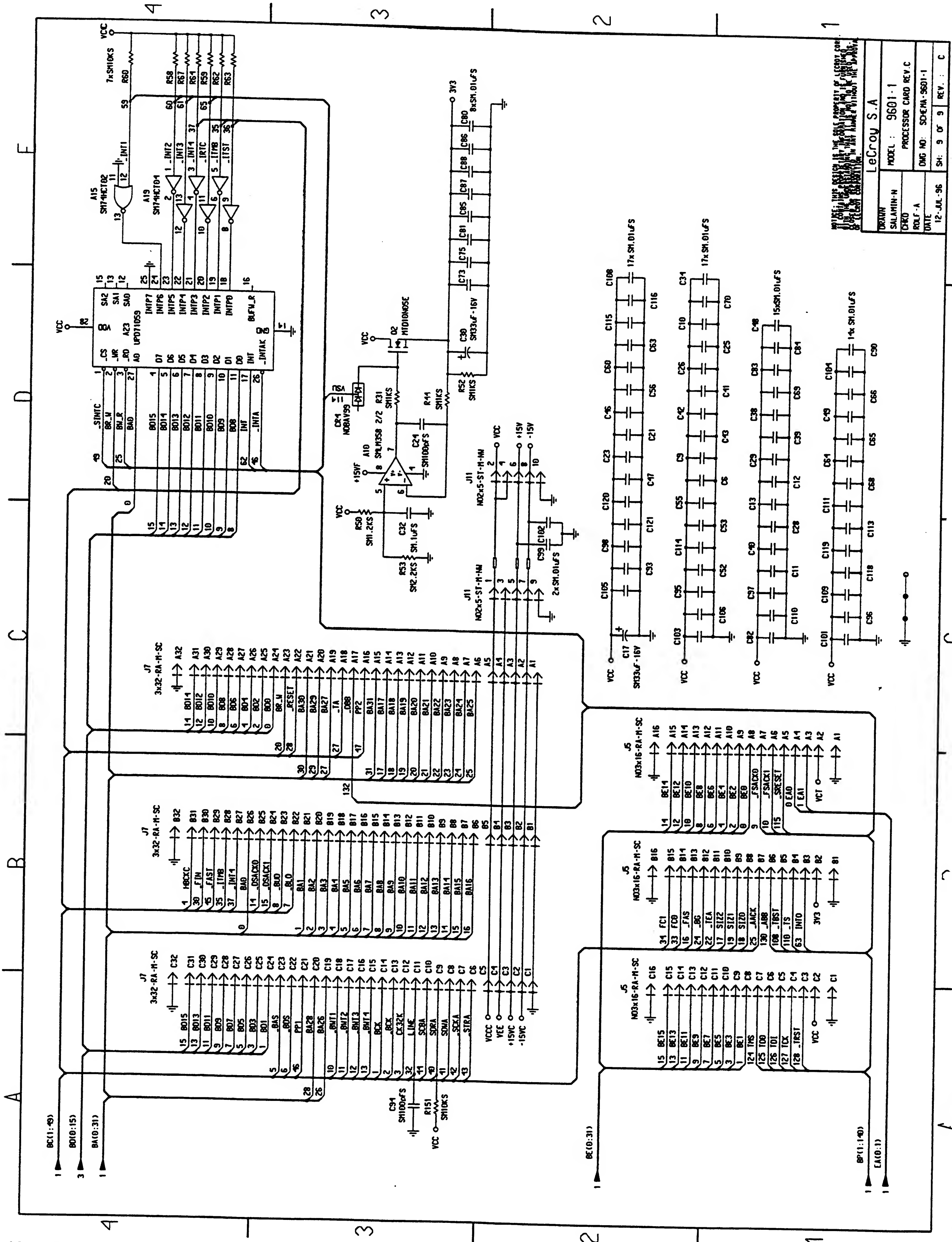
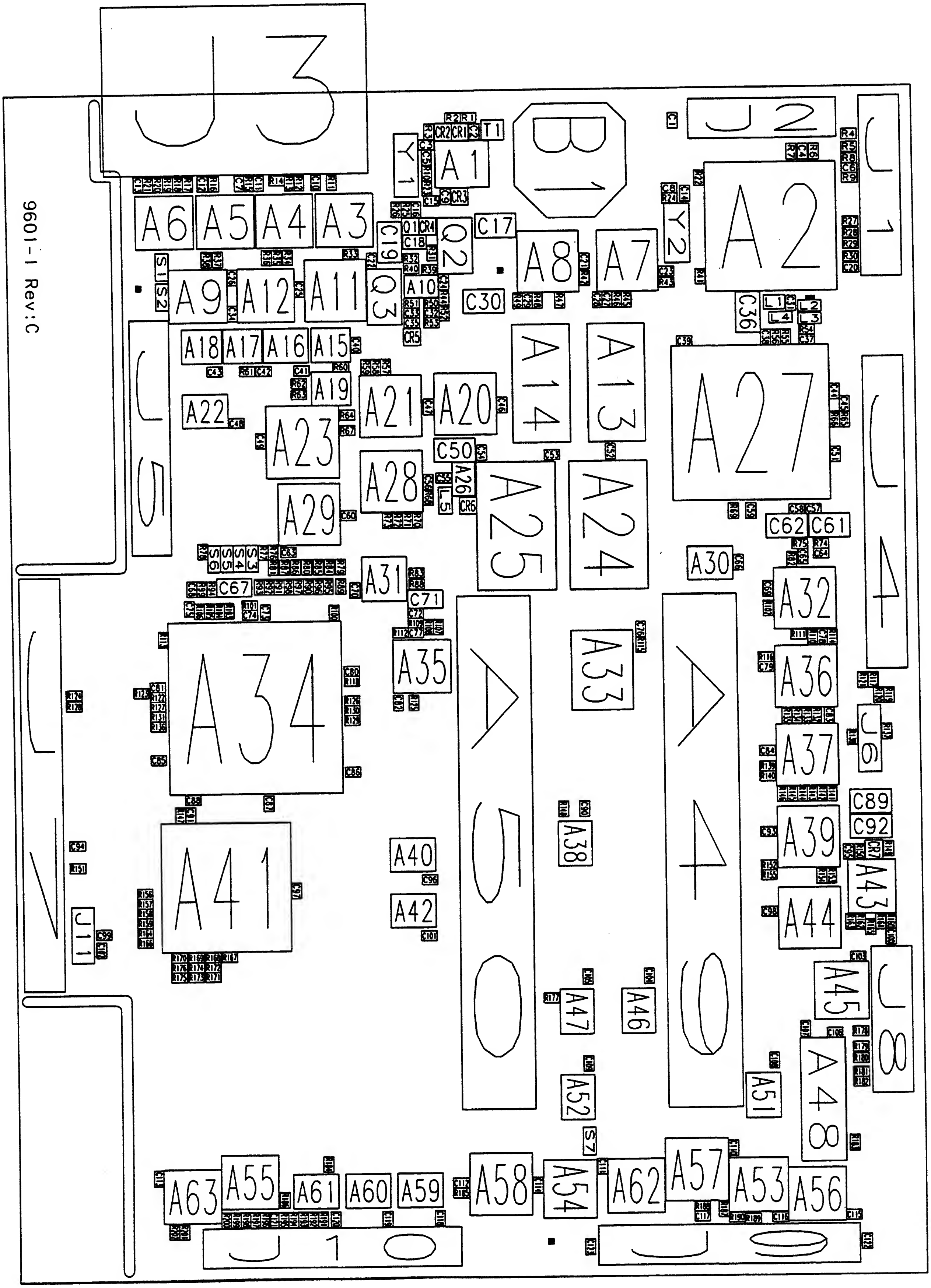
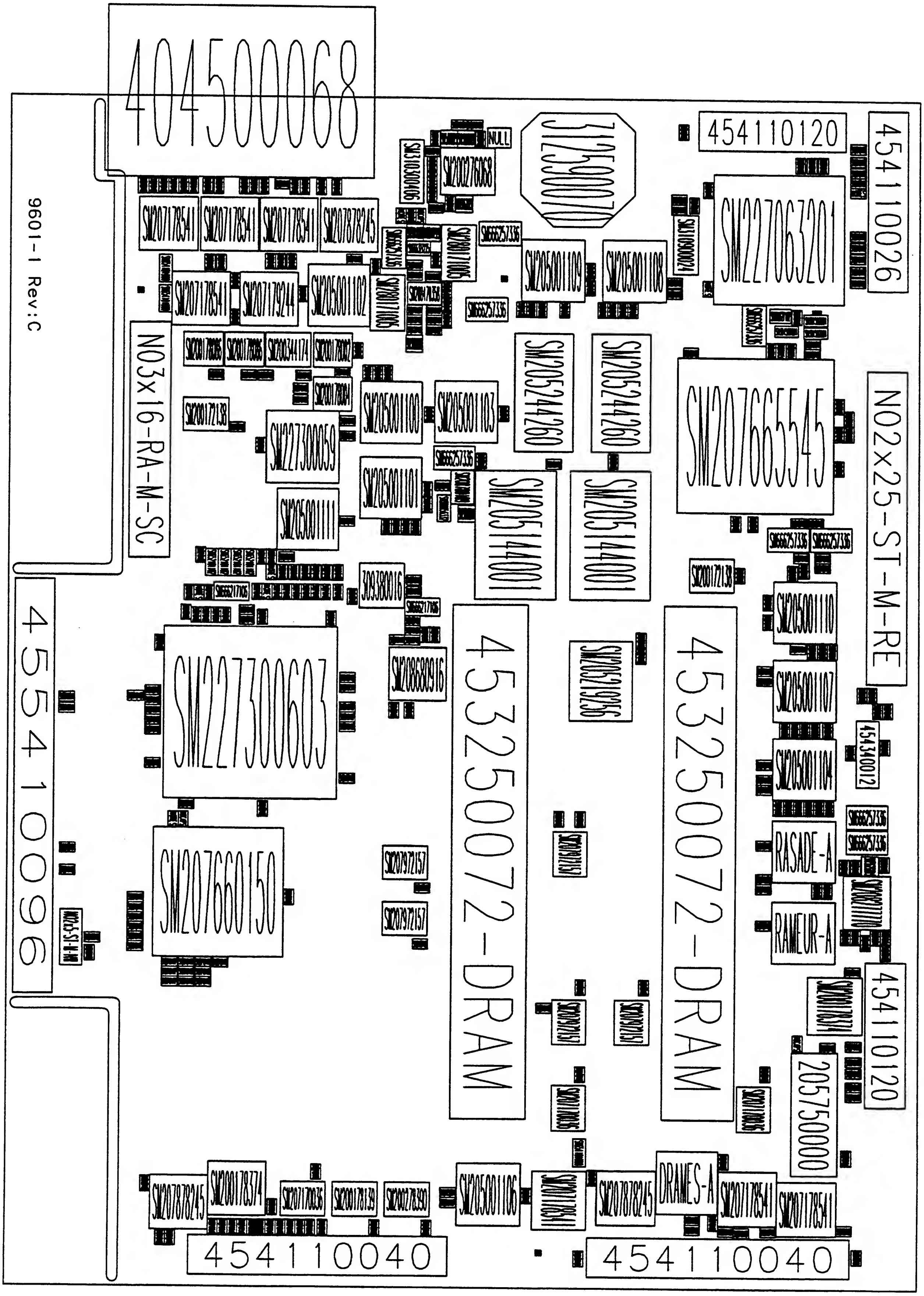
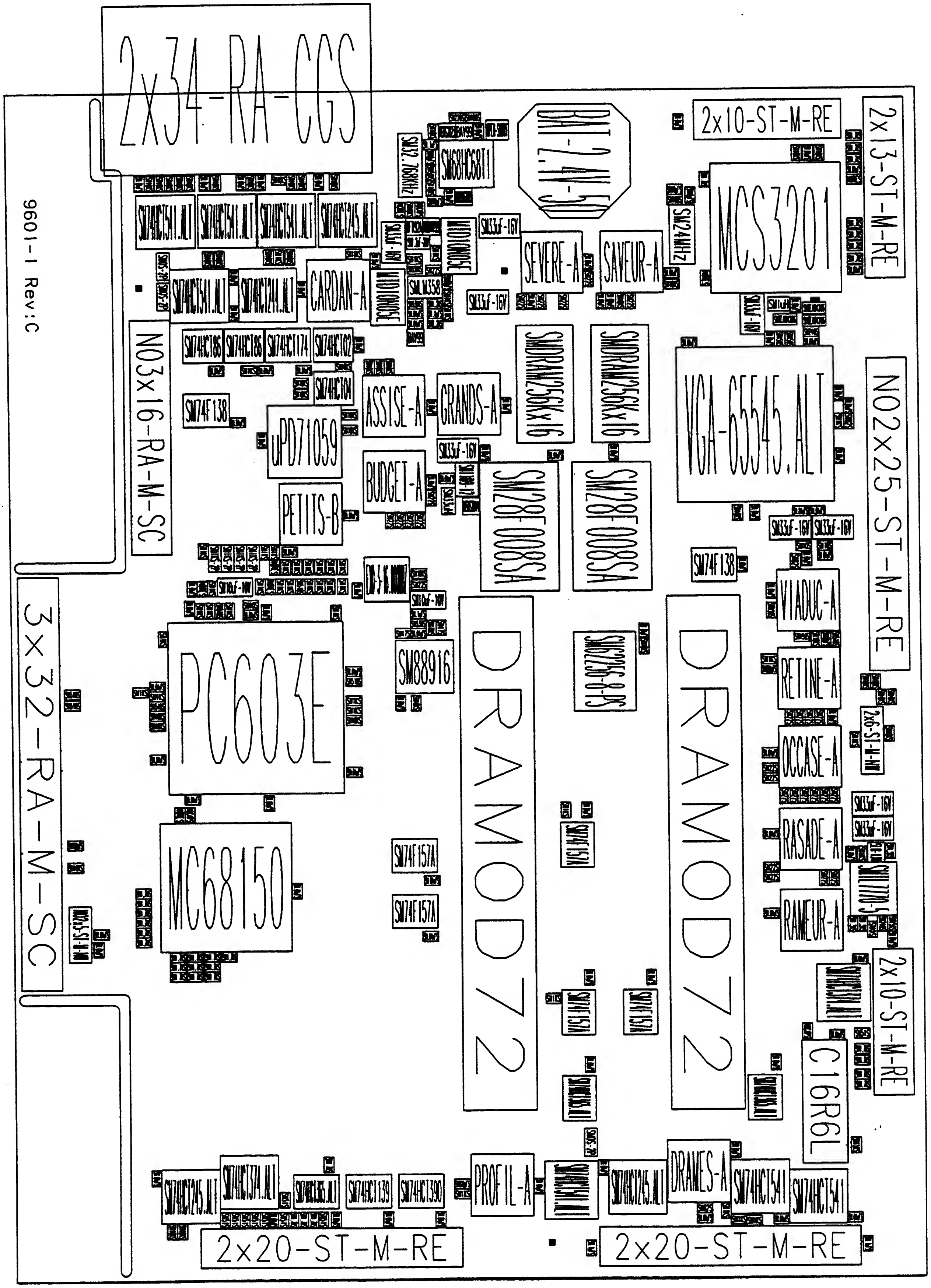
LeCroy S.A
MODEL : 9601-1
PROCESSOR CARD REV.C
DWG NO: SCHEMA-9601-1
SH: 7 OF 9
REV. : C
DRAWN SALAMIN-N
CHKD ROLF-A
DATE 12-JUL-96


INTERNAL PRINTER
FLOPPY DISK
A2 MCS3201
A45 SM74HCT374
A55 SM74HCT374
A60 SM74HCT139 1/2
A60 SM74HCT139 2/2
A61 SM74HCT365
A51 SM74HCT365
A58 PROFIL-A
A63 SM74HCT245
A59 SM74HC390 2/2
A52 SM74HCT365
J8 2x10-ST-M-RE
J1 2x13-ST-M-RE
Y2 SP24MHz
Q1 BFR92A
LeCroy S.A
MODEL: 9601-1
PROCESSOR CARD REV.C
DWG NO: SCHEMA-9601-1
SH: 8 of 9
REV.: C
DRAWN SALAMIN-N
CHKD
ROLF-A
DATE 12-JUL-96


LeCroy S.A
MODEL : 9601-1
PROCESSOR CARD REV.C
DRAWN SALAMIN-N
CHKD ROLF-A
DATE 12-JUL-96
DWG NO: SCHEMA-9601-1
SH: 9 OF 9
REV.: C
A15 SM74HCT02
A19 SM74HCT04
A23 UPD71059
A10 SML M358 2/2
Q2 MTD10N05E
CR4 NDBAV99
J11 ND2x5-ST-M-NW
J7 3x32-RA-M-SC
J5 ND3x16-RA-M-SC
7xSM10KS
8xSM.01uFS
17xSM.01uFS
15xSM.01uFS
14xSM.01uFS
2xSM.01uFS
SM33uF-16V
BC(1:49)
BD(0:15)
BA(0:31)
BE(0:31)
BP(1:140)
EA(0:1)
VCC
3V3
+15V
-15V


J3
9601-1 Rev:C
B1
J2
J1
A1
T1
Y1
Y2
A2
A6
A5
A4
A3
Q1
CR4
Q2
C17
C19
C18
A8
A7
S1
S2
A9
A12
A11
Q3
A10
C30
C36
L1
L2
L4
L3
J5
A18
A17
A16
A15
A14
A13
A27
J4
A22
A19
A21
A20
A23
C50
A28
A26
L5
CR6
A25
A24
A29
C62
C61
S6
S5
S4
S3
A30
A31
C67
C71
A32
A34
A35
A33
A36
J6
A37
C89
C92
A39
A43
J7
A41
A40
A38
A42
J11
A44
A45
J8
A47
A46
A52
A51
A48
S7
A63
A55
A61
A60
A59
A58
A54
A62
A57
A53
A56
J10
J9
A50
A49


40450068
9601-1 Rev:C
31250007
454110120
454110026
SM227063201
SM207665545
NO2x25-ST-M-RE
NO3x16-RA-M-SC
SM207178541
SM207878245
SM207179244
SM205001102
SM205001109
SM205001108
SM200276068
SM227300059
SM205001100
SM205001103
SM205001101
SM205001111
SM205244260
SM205144001
SM227300603
SM207660150
455410096
453250072-DRAM
SM205001110
SM205001107
SM205001104
454340012
RASADE-A
RAMEUR-A
454110120
205750000
SM205001106
DRAMES-A
454110040
454110040
NULL


2x34-RA-CGS
BAT-2.4V-50
2x10-ST-M-RE
2x13-ST-M-RE
SW32.768KHz
SM68HC68T1
SM74HCT541.ALT
SM74HCT541.ALT
SM74HCT541.ALT
SM74HCT245.ALT
SM74HCT541.ALT
SM74HCT241.ALT
CARDAN-A
MT010N05E
SEVERE-A
SAVEUR-A
SM24MHz
MCS3201
9601-1 Rev:C
NO3x16-RA-M-SC
SM74HC86
SM74HC86
SM74HCT174
SM74HCT02
SM74HCT04
SM74F138
uPD71059
ASSISE-A
GRANDS-A
SMDRAM256Kx16
SMDRAM256Kx16
VGA-65545.ALT
NO2x25-ST-M-RE
BUDGET-A
PETITS-B
SM28F008SA
SM28F008SA
SM74F138
VIADUC-A
3x32-RA-M-SC
PC603E
SM88916
DRAMOD72
DRAMOD72
RETINE-A
OCCASE-A
RASADE-A
RAMEUR-A
MC68150
SM74F157A
SM74F157A
SM74F157A
SM74F157A
SM74F157A
2x10-ST-M-RE
C16R6L
SM74HCT245.ALT
SM74HCT374.ALT
SM74HCT139
SM74HCT390
PROFIL-A
SM74HCT245.ALT
DRAMES-A
SM74HCT541
SM74HCT541
2x20-ST-M-RE
2x20-ST-M-RE

PART: F9601-1-X DESC : PROCESSOR with 8Mb or 64Mb RAM

Location	Part Number	Description
A1	SM200276068	SM68HC68T1
A2	SM227063201	MCS3201
A3	SM207878245	SM74HCT245
A4	SM207178541	SM74HCT541
A5	SM207178541	SM74HCT541
A6	SM207178541	SM74HCT541
A7	SM205001108	SAVEUR-A
A8	SM205001109	SEVERE-A
A9	SM207178541	SM74HCT541
A10	SM208470358	SMLM358
A11	SM205001102	CARDAN-A
A12	SM207179244	SM74HCT244
A13	SM205244260	DRAM256Kx16
A14	SM205244260	DRAM256Kx16
A15	SM200178002	SM74HCT02
A16	SM200344174	SM74HCT174
A17	SM200178086	SM74HCT86
A18	SM200178086	SM74HCT86
A19	SM200178004	SM74HCT04
A20	SM205001103	GRANDS-A
A21	SM205001100	ASSISE-A
A22	SM200172138	SM74F138
A23	SM227300059	uPD71059
A24	SM205144001	SM28F008SA
A25	SM205144001	SM28F008SA
A26	SM208780109	SM1109-12
A27	SM207665545	VGA-65545
A28	SM205001116	BUDGET-C
A29	SM205001111	PETITS-B
A30	SM200172138	SM74F138
A31	309380016	3-16.000MHZ
A32	SM205001110	VIADUC-A
A33	SM205219257	SM62256-8-HD
A34	SM227300603	PC603E
A35	SM208680916	SM88916
A36	SM205001107	RETINE-A
A37	SM205001104	OCCASE-A
A38	SM207972157	SM74F157A
A39	SM205001114	RASADE-A
A40	SM207972157	SM74F157A
A41	SM207660150	MC68150
A42	SM207972157	SM74F157A
A43	SM208277770	SMTL7770-5
A44	SM205001113	RAMEUR-A
A45	SM200178374	SM74HCT374
A46	SM207972157	SM74F157A
A47	SM207972157	SM74F157A
A48	205750000	C16R6L
A49	453250072	DRAMOD72
A50	453250072	DRAMOD72
A51	SM207170036	SM74HCT365
A52	SM207170036	SM74HCT365
A53	SM207178541	SM74HCT541
A54	SM207178541	SM74HCT541
A55	SM200178374	SM74HCT374
A56	SM207178541	SM74HCT541
A57	SM205001115	DRAMES-A
A58	SM205001106	PROFIL-A
A59	SM200278390	SM74HCT390
A60	SM200178139	SM74HCT139
A61	SM207170036	SM74HCT365
A62	SM207878245	SM74HCT245
A63	SM207878245	SM74HCT245
B1	312590070	BAT-2.4V-50
C1	SM661207103	SM.01uFS
C2	SM661207103	SM.01uFS
C3	SM661207104	SM.1uFS
C4	SM661207103	SM.01uFS
C5	SM661255180	SM18pFS
C6	SM661207103	SM.01uFS
C7	SM661207103	SM.01uFS
C8	SM661255100	SM10pFS
C9	SM661207103	SM.01uFS
C10	SM661207103	SM.01uFS
C11	SM661207103	SM.01uFS
C12	SM661207103	SM.01uFS
C13	SM661207103	SM.01uFS
C14	SM661255100	SM10pFS
C15	SM661255180	SM18pFS
C17	SM666257336	SM33uF-16V
C18	SM666327225	SM2.2uF-20V
C19	SM666257336	SM33uF-16V
C20	SM661207103	SM.01Ufs
C21	SM661207103	SM.01uFS

PART: F9601-1-X **DESC : PROCESSOR with 8Mb or 64Mb RAM**

Location	Part Number	Description
C22	SM661207103	SM.01uFS
C23	SM661207103	SM.01uFS
C24	SM661255101	SM100pFS
C25	SM661207103	SM.01uFS
C26	SM661207103	SM.01uFS
C27	SM661207102	SM.001uFS
C28	SM661207103	SM.01uFS
C29	SM661207103	SM.01uFS
C30	SM666257336	SM33uF-16V
C31	SM661207103	SM.01uFS
C32	SM661207104	SM.1uFS
C33	SM661207103	SM.01uFS
C34	SM661207103	SM.01uFS
C35	SM661207103	SM.01uFS
C36	SM666257336	SM33uF-16V
C37	SM661207103	SM.01uFS
C38	SM661207103	SM.01uFS
C39	SM661207103	SM.01uFS
C40	SM661207103	SM.01uFS
C41	SM661207103	SM.01uFS
C42	SM661207103	SM.01uFS
C43	SM661207103	SM.01uFS
C44	SM661207103	SM.01uFS
C46	SM661207103	SM.01uFS
C47	SM661207103	SM.01uFS
C48	SM661207103	SM.01uFS
C49	SM661207103	SM.01uFS
C50	SM666257336	SM33uF-16V
C51	SM661207103	SM.01uFS
C52	SM661207103	SM.01uFS
C53	SM661207103	SM.01uFS
C54	SM661207103	SM.01uFS
C55	SM661207103	SM.01uFS
C56	SM661207103	SM.01uFS
C57	SM661207103	SM.01uFS
C58	SM661207103	SM.01uFS
C59	SM661207103	SM.01uFS
C60	SM661207103	SM.01uFS
C61	SM666257336	SM33uF-16V
C62	SM666257336	SM33uF-16V
C63	SM661207103	SM.01uFS
C64	SM661207103	SM.01uFS
C65	SM661207103	SM.01uFS
C66	SM661207103	SM.01uFS
C67	SM666217106	SM10uF-10V
C68	SM661207103	SM.01uFS
C69	SM661207103	SM.01uFS
C70	SM661207103	SM.01uFS
C71	SM666217106	SM10uF-10V
C72	SM661207104	SM.1uFS
C73	SM661207103	SM.01uFS
C74	SM661207103	SM.01uFS
C75	SM661207103	SM.01uFS
C76	SM661207103	SM.01uFS
C77	SM661207103	SM.01uFS
C78	SM661255101	SM100pFS
C79	SM661255221	SM220pFS
C80	SM661207103	SM.01uFS
C81	SM661207103	SM.01uFS
C82	SM661207103	SM.01uFS
C83	SM661207103	SM.01uFS
C84	SM661207103	SM.01uFS
C85	SM661207103	SM.01uFS
C86	SM661207103	SM.01uFS
C87	SM661207103	SM.01uFS
C88	SM661207103	SM.01uFS
C89	SM666257336	SM33uF-16V
C90	SM661207103	SM.01uFS
C92	SM666257336	SM33uF-16V
C93	SM661207103	SM.01uFS
C94	SM661255101	SM100pFS
C95	SM661207103	SM.01uFS
C96	SM661207103	SM.01uFS
C97	SM661207103	SM.01uFS
C98	SM661207103	SM.01uFS
C99	SM661207103	SM.01uFS
C100	SM661207103	SM.01uFS
C101	SM661207103	SM.01uFS
C102	SM661207103	SM.01uFS
C103	SM661207103	SM.01uFS
C104	SM661207103	SM.01uFS
C105	SM661207103	SM.01uFS
C106	SM661207103	SM.01uFS
C108	SM661207103	SM.01uFS

PART: F9601-1-X DESC : PROCESSOR with 8Mb or 64Mb RAM

Location	Part Number	Description
C109	SM661207103	SM.01uFS
C110	SM661207103	SM.01uFS
C111	SM661207103	SM.01uFS
C112	SM661255221	SM220pFS
C113	SM661207103	SM.01uFS
C114	SM661207103	SM.01uFS
C115	SM661207103	SM.01uFS
C116	SM661207103	SM.01uFS
C117	SM661207103	SM.01uFS
C118	SM661207103	SM.01uFS
C119	SM661207103	SM.01uFS
C120	SM661207103	SM.01uFS
C121	SM661207103	SM.01uFS
C122	SM661207104	SM.1uFS
C123	SM661207104	SM.1uFS
C124	SM666257336	SM33uF-16V
C125	SM661207104	SM.1uFS
C126	SM661207104	SM.1uFS
CR1	SM236030099	BAV99
CR2	SM253032823	HSMS2823
CR5	SM236030099	BAV99
CR6	SM232032814	HSMS2814
CR7	SM256232013	SLM-13V
J1	454110026	2x13-ST-M-RE
J2	454110120	2x10-ST-M-RE
J3	404500068	2x34-RA-CGS
J6	454340012	2x6-ST-M-NW
J7	455410096	3x32-RA-M-SC
J8	454110120	2x10-ST-M-RE
J9	454110040	2x20-ST-M-RE
J10	454110040	2x20-ST-M-RE
L1	SM300327102	SM1uH
L2	SM301502001	SMBEAD1206
L3	SM301502001	SMBEAD1206
L4	SM301502001	SMBEAD1206
L5	SM300056332	SM33uH
Q1	SM270130092	BFR92A
Q2	SM280171005	MTD10N05E
Q3	SM280171005	MTD10N05E
R1	SM652101101	SM100S
R2	SM652101221	SM220S
R3	SM652101103	SM10KS
R4	SM652101472	SM4.7KS
R5	SM652101472	SM4.7KS
R6	SM652101103	SM10KS
R7	SM652101103	SM10KS
R8	SM652101472	SM4.7KS
R10	SM652101154	SM150KS
R11	SM652101103	SM10KS
R12	SM652101103	SM10KS
R13	SM652101103	SM10KS
R14	SM652101103	SM10KS
R15	SM652101103	SM10KS
R16	SM652101103	SM10KS
R17	SM652101103	SM10KS
R18	SM652101103	SM10KS
R19	SM652101103	SM10KS
R20	SM652101103	SM10KS
R21	SM652101103	SM10KS
R22	SM652101472	SM4.7KS
R23	SM652101106	SM10MS
R24	SM652101106	SM10MS
R25	SM652101103	SM10KS
R27	SM652101472	SM4.7KS
R28	SM652101472	SM4.7KS
R29	SM652101472	SM4.7KS
R30	SM652101472	SM4.7KS
R31	SM652101102	SM1KS
R32	SM652101102	SM1KS
R33	SM652101103	SM10KS
R34	SM652101103	SM10KS
R35	SM652101102	SM1KS
R36	SM652101103	SM10KS
R37	SM652101103	SM10KS
R38	SM652101103	SM10KS
R39	SM652101220	SM22S
R40	SM652101334	SM330KS
R42	SM652101220	SM22S
R43	SM652101103	SM10KS
R44	SM652101102	SM1KS
R45	SM652101220	SM22S
R46	SM652101103	SM10KS
R47	SM652101220	SM22S
R48	SM652101220	SM22S

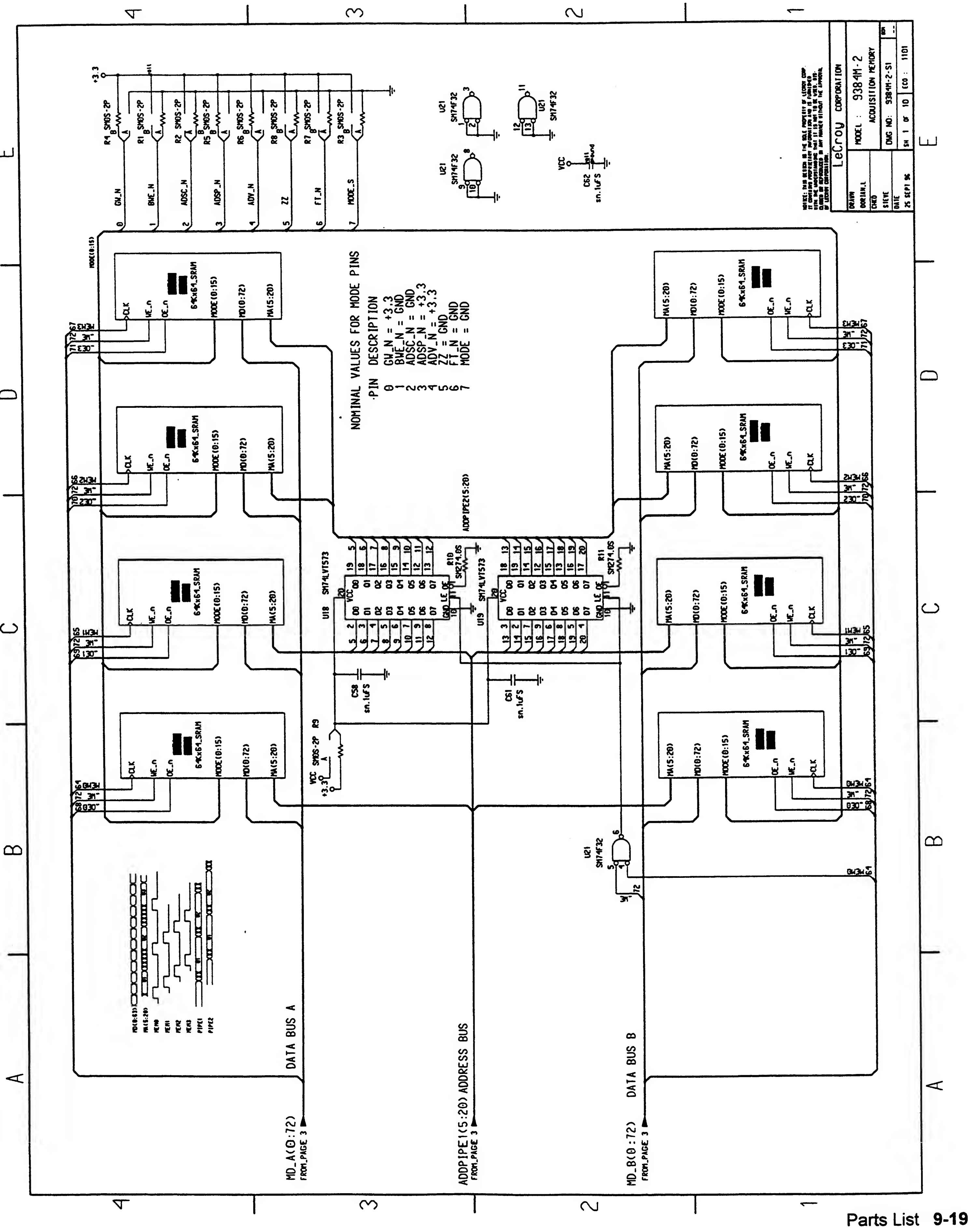
PART: F9601-1-X **DESC : PROCESSOR with 8Mb or 64Mb RAM**

Location	Part Number	Description
R49	SM652101220	SM22S
R50	SM652101122	SM1.2KS
R51	SM652101334	SM330KS
R52	SM652101102	SM1KS
R53	SM652101222	SM2.2KS
R54	SM652101241	SM240S
R55	SM652101151	SM150S
R56	SM652101151	SM150S
R57	SM652101102	SM1KS
R58	SM652101103	SM10KS
R59	SM652101103	SM10KS
R60	SM652101103	SM10KS
R61	SM652101102	SM1KS
R62	SM652101103	SM10KS
R63	SM652101103	SM10KS
R64	SM652101103	SM10KS
R65	SM652101151	SM150S
R66	SM652101102	SM1KS
R67	SM652101103	SM10KS
R68	SM652101220	SM22S
R69	SM652101103	SM10KS
R70	SM652101220	SM22S
R71	SM652101220	SM22S
R72	SM652101220	SM22S
R73	SM652101220	SM22S
R74	SM652101100	SM10S
R75	SM652101100	SM10S
R76	SM652101102	SM1KS
R77	SM652101102	SM1KS
R78	SM652101102	SM1KS
R79	SM652101102	SM1KS
R80	SM652101102	SM1KS
R82	SM652101820	SM82S
R83	SM652101103	SM10KS
R84	SM652101102	SM1KS
R85	SM652101102	SM1KS
R86	SM652101102	SM1KS
R87	SM652101102	SM1KS
R88	SM652101220	SM22S
R89	SM652101102	SM1KS
R90	SM652101102	SM1KS
R91	SM652101102	SM1KS
R93	SM652101102	SM1KS
R94	SM652101102	SM1KS
R95	SM652101102	SM1KS
R96	SM652101102	SM1KS
R97	SM652101511	SM510S
R98	SM652101102	SM1KS
R100	SM652101102	SM1KS
R101	SM652101100	SM10S
R102	SM652101151	SM150S
R103	SM652101102	SM1KS
R104	SM652101511	SM510S
R105	SM652101102	SM1KS
R106	SM652101102	SM1KS
R107	SM652101470	SM47S
R108	SM652101474	SM470KS
R109	SM652101331	SM330S
R110	SM652101103	SM10KS
R111	SM652101151	SM150S
R112	SM652101470	SM47S
R113	SM652101102	SM1KS
R114	SM652101511	SM510S
R115	SM652101103	SM10KS
R116	SM652101102	SM1KS
R117	SM652101103	SM10KS
R118	SM652101511	SM510S
R119	SM652101103	SM10KS
R120	SM652101103	SM10KS
R121	SM652101103	SM10KS
R122	SM652101102	SM1KS
R123	SM652101102	SM1KS
R124	SM652101511	SM510S
R125	SM652101103	SM10KS
R126	SM652101102	SM1KS
R127	SM652101511	SM510S
R128	SM652101511	SM510S
R129	SM652101103	SM10KS
R130	SM652101102	SM1KS
R131	SM652101103	SM10KS
R132	SM652101220	SM22S
R133	SM652101220	SM22S
R134	SM652101220	SM22S
R135	SM652101220	SM22S

PART: F9601-1-X DESC : PROCESSOR with 8Mb or 64Mb RAM

Location	Part Number	Description
R136	SM652101103	SM10KS
R137	SM652101103	SM10KS
R138	SM652101102	SM1KS
R139	SM652101220	SM22S
R140	SM652101220	SM22S
R141	SM652101220	SM22S
R142	SM652101220	SM22S
R143	SM652101220	SM22S
R144	SM652101220	SM22S
R145	SM652101220	SM22S
R146	SM652101220	SM22S
R147	SM652101101	SM100S
R148	SM652101102	SM1KS
R149	SM652101152	SM1.5KS
R150	SM652101102	SM1KS
R151	SM652101103	SM10KS
R152	SM652101220	SM22S
R153	SM652101220	SM22S
R154	SM652101220	SM22S
R155	SM652101220	SM22S
R156	SM652101472	SM4.7KS
R157	SM652101472	SM4.7KS
R158	SM652101472	SM4.7KS
R159	SM652101472	SM4.7KS
R160	SM652101153	SM15KS
R161	SM652101241	SM240S
R162	SM652101152	SM1.5KS
R163	SM652101152	SM1.5KS
R164	SM652101472	SM4.7KS
R165	SM654101000	SM0S
R166	SM652101472	SM4.7KS
R167	SM652101472	SM4.7KS
R168	SM652101472	SM4.7KS
R169	SM652101472	SM4.7KS
R170	SM652101472	SM4.7KS
R171	SM652101472	SM4.7KS
R172	SM652101472	SM4.7KS
R173	SM652101472	SM4.7KS
R174	SM652101472	SM4.7KS
R175	SM652101472	SM4.7KS

Location	Part Number	Description
R176	SM652101472	SM4.7KS
R177	SM652101102	SM1KS
R178	SM652101510	SM51S
R179	SM652101472	SM4.7KS
R180	SM652101472	SM4.7KS
R181	SM652101472	SM4.7KS
R182	SM652101472	SM4.7KS
R183	SM652101153	SM15KS
R184	SM652101472	SM4.7KS
R185	SM652101102	SM1KS
R186	SM652101510	SM51S
R187	SM652101102	SM1KS
R188	SM652101820	SM82S
R189	SM652101102	SM1KS
R190	SM652101102	SM1KS
R191	SM652101510	SM51S
R192	SM652101472	SM4.7KS
R193	SM652101472	SM4.7KS
R194	SM652101472	SM4.7KS
R195	SM652101510	SM51S
R196	SM652101510	SM51S
R197	SM652101510	SM51S
R198	SM652101510	SM51S
R199	SM652101510	SM51S
R200	SM652101510	SM51S
R201	SM652101103	SM10KS
R202	SM652101103	SM10KS
R203	SM652101511	SM510S
R204	SM652101150	SM15S
R205	SM652101472	SM4.7KS
R206	SM654101000	SM0S
S1	SM654101000	SM0S-2P
S2	SM654101000	SM0S-2P
S3	SM652101102	SM1KS-2P
S4	SM652101102	SM1KS-2P
S5	SM652101102	SM1KS-2P
S6	SM652101102	SM1KS-2P
S7	SM654101000	SM0S-2P
Y1	SM310300406	SM32.768KHz
Y2	SM310900024	SM24MHz


NOMINAL VALUES FOR MODE PINS
PIN DESCRIPTION
0 GW_N = +3.3
1 BWE_N = GND
2 ADSC_N = GND
3 ADSP_N = +3.3
4 ADV_N = +3.3
5 ZZ = GND
6 FT_N = GND
7 MODE = GND
64Kx64_SRAM
CLK
WE_n
OE_n
MODE(0:15)
MD(0:72)
MA(5:20)
MODE(0:15)
GW_N
BWE_N
ADSC_N
ADSP_N
ADV_N
ZZ
FT_N
MODE_S
+3.3
R4 SMOS-2P
R1 SMOS-2P
R2 SMOS-2P
R5 SMOS-2P
R6 SMOS-2P
R8 SMOS-2P
R7 SMOS-2P
R3 SMOS-2P
R9 SMOS-2P
U21 SM74F32
VCC
C62 sn.1uFS
C58 sn.1uFS
C61 sn.1uFS
U18 SM74LVT573
U19 SM74LVT573
R10 SM274.0S
R11 SM274.0S
ADDPIPE2(5:20)
DATA BUS A
ADDPIPE1(5:20) ADDRESS BUS
DATA BUS B
MD_A(0:72) FROM_PAGE 3
ADDPIPE1(5:20) FROM_PAGE 3
MD_B(0:72) FROM_PAGE 3
MD(0:63)
MA(5:20)
PIPE1
PIPE2
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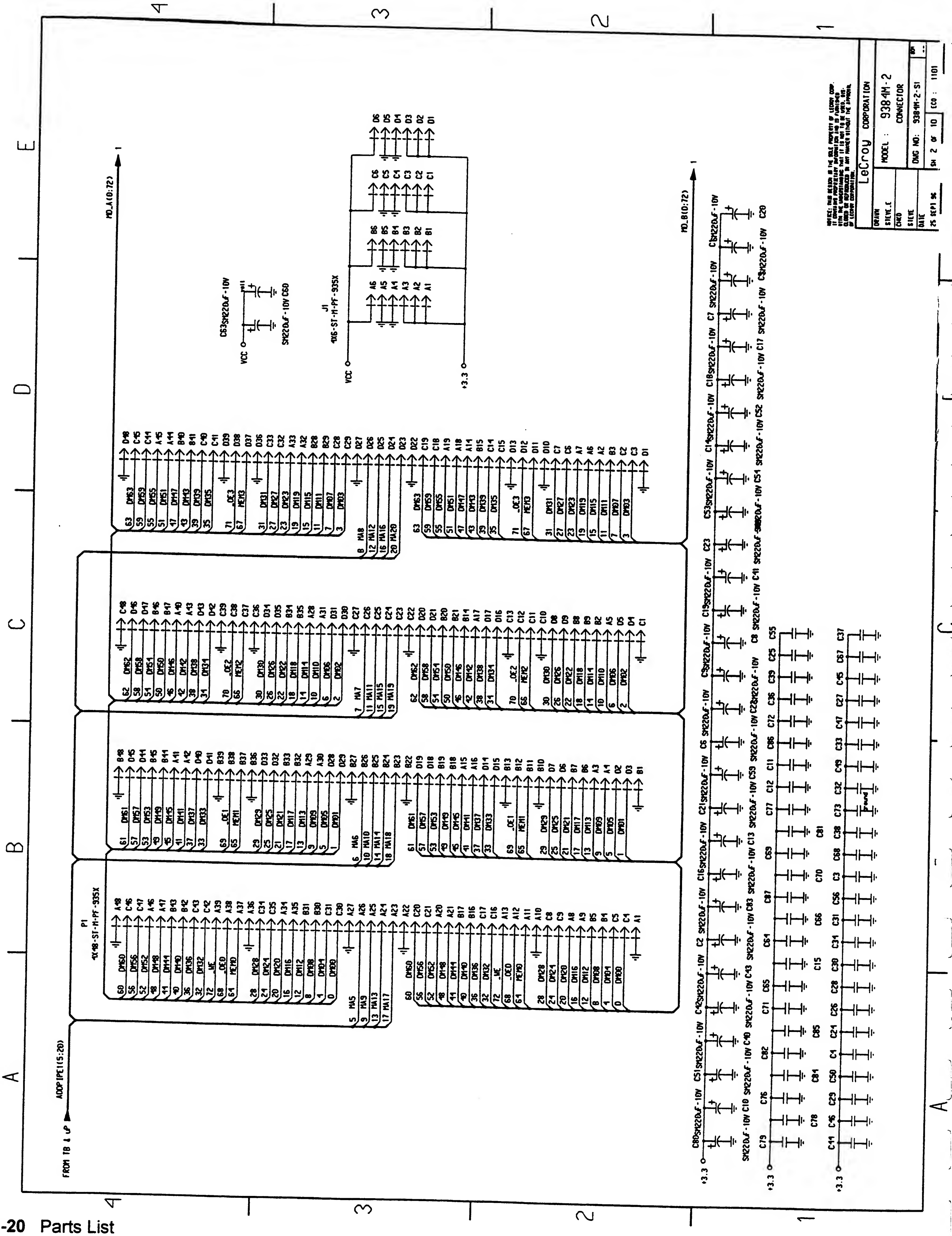
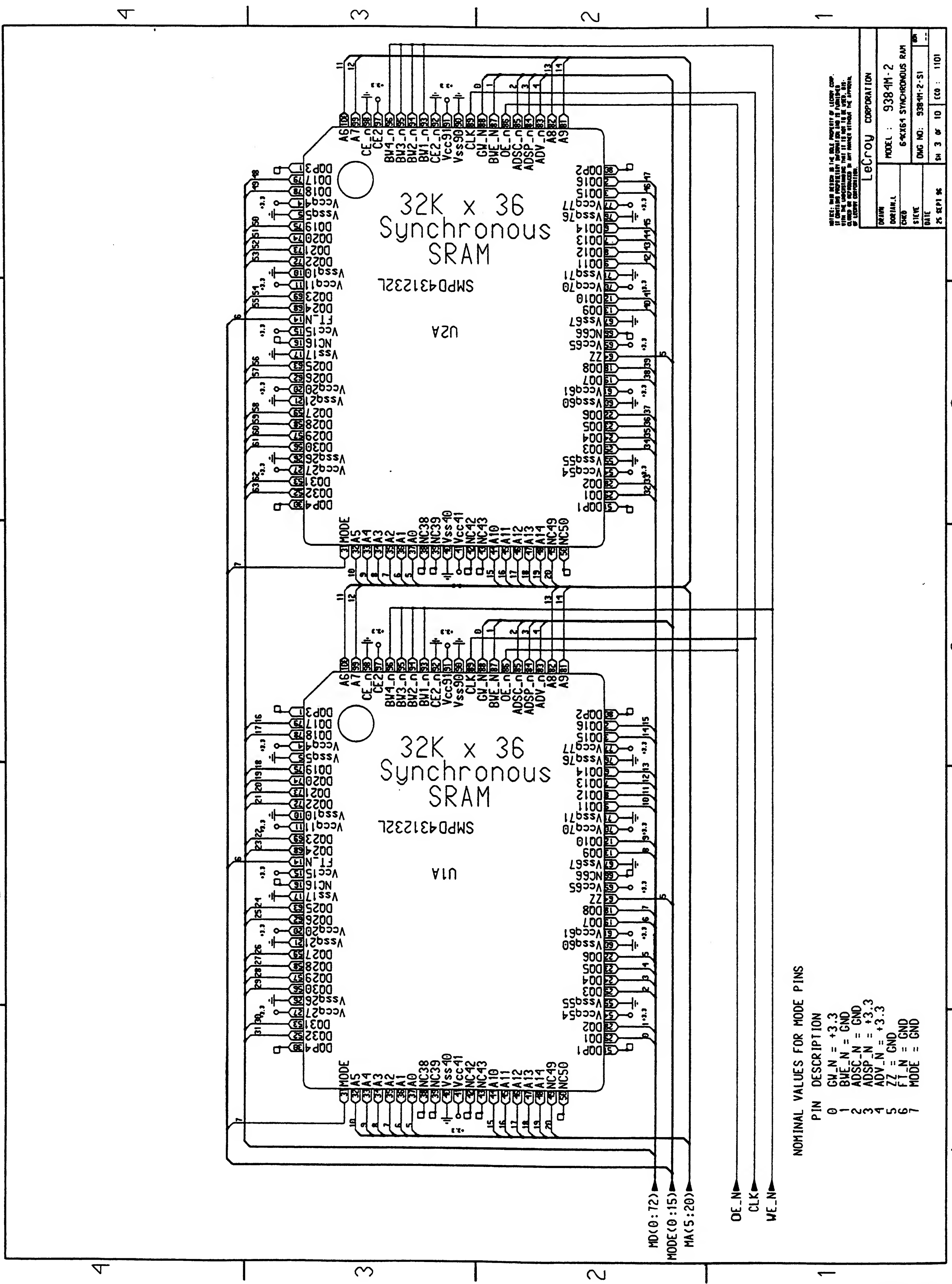
LeCroy CORPORATION
MODEL : 9384M-2
ACQUISITION MEMORY
DRAWN DORIAN.L
CHKD STEVE
DATE 25 SEPT 96
DWG NO: 9384M-2-S1
SH 1 OF 10
ECO : 1101
1
2
3
4
A
B
C
D
E


LeCroy CORPORATION
MODEL : 9384M-2
CONNECTOR
DWG NO: 9384M-2-S1
SH 2 OF 10
ECO : 1101
DRAWN STEVE.E
CHKD
STEVE
DATE
25 SEP 96
P1
4X48-ST-M-PF-935X
J1
4X6-ST-M-PF-935X
MD_A(0:72)
MD_B(0:72)
ADDRIPE(15:20)
FROM TB & uP
VCC
+3.3
SM220uF-10V
A
B
C
D
E
1
2
3
4


32K x 36
Synchronous
SRAM
SMPD431232L
U2A
U1A
A6
A7
CE_n
CE2
BW4_n
BW3_n
BW2_n
BW1_n
CE2_n
Vcc91
Vss90
CLK
GW_N
BWE_N
OE_n
ADSC_n
ADSP_n
ADV_n
A8
A9
DQP3
DQ17
DQ18
Vccq4
Vssq5
DQ19
DQ20
DQ21
DQ22
Vssq10
Vccq11
DQ23
DQ24
FT_N
Vcc15
NC16
Vss17
DQ25
DQ26
Vccq20
Vssq21
DQ27
DQ28
DQ29
DQ30
Vssq26
Vccq27
DQ31
DQ32
DQP4
MODE
A5
A4
A3
A2
A1
A0
NC38
NC39
Vss40
Vcc41
NC42
NC43
A10
A11
A12
A13
A14
NC49
NC50
DQP2
DQ16
DQ15
Vccq77
Vssq76
DQ14
DQ13
DQ12
DQ11
Vssq71
Vccq70
DQ10
DQ9
Vss67
NC66
Vcc65
ZZ
DQ8
DQ7
Vccq61
Vssq60
DQ6
DQ5
DQ4
DQ3
Vssq55
Vccq54
DQ2
DQ1
DQP1
+3.3
MD(0:72)
MODE(0:15)
MA(5:20)
OE_N
CLK
WE_N
NOMINAL VALUES FOR MODE PINS
PIN DESCRIPTION
0 GW_N = +3.3
1 BWE_N = GND
2 ADSC_N = GND
3 ADSP_N = +3.3
4 ADV_N = +3.3
5 ZZ = GND
6 FT_N = GND
7 MODE = GND
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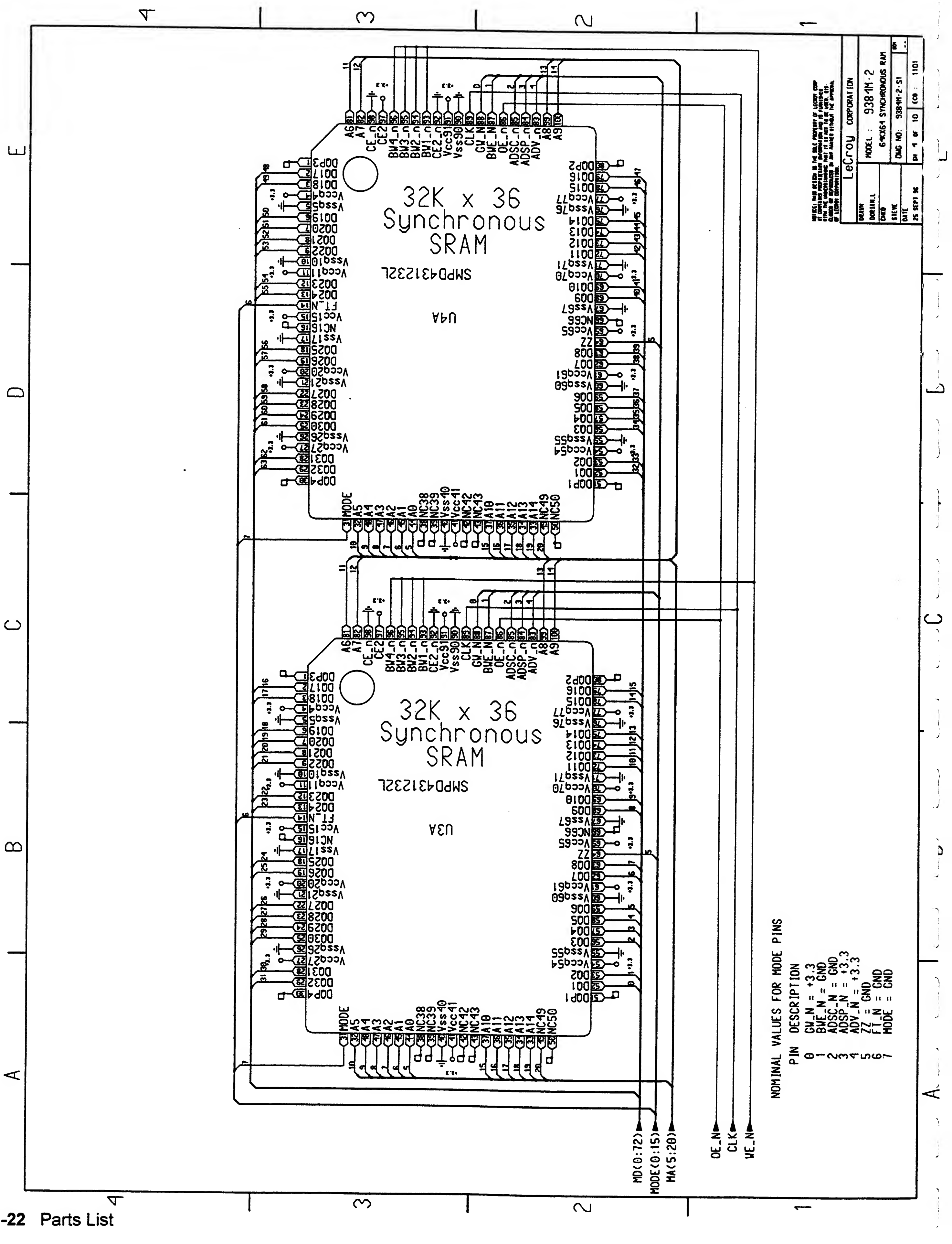
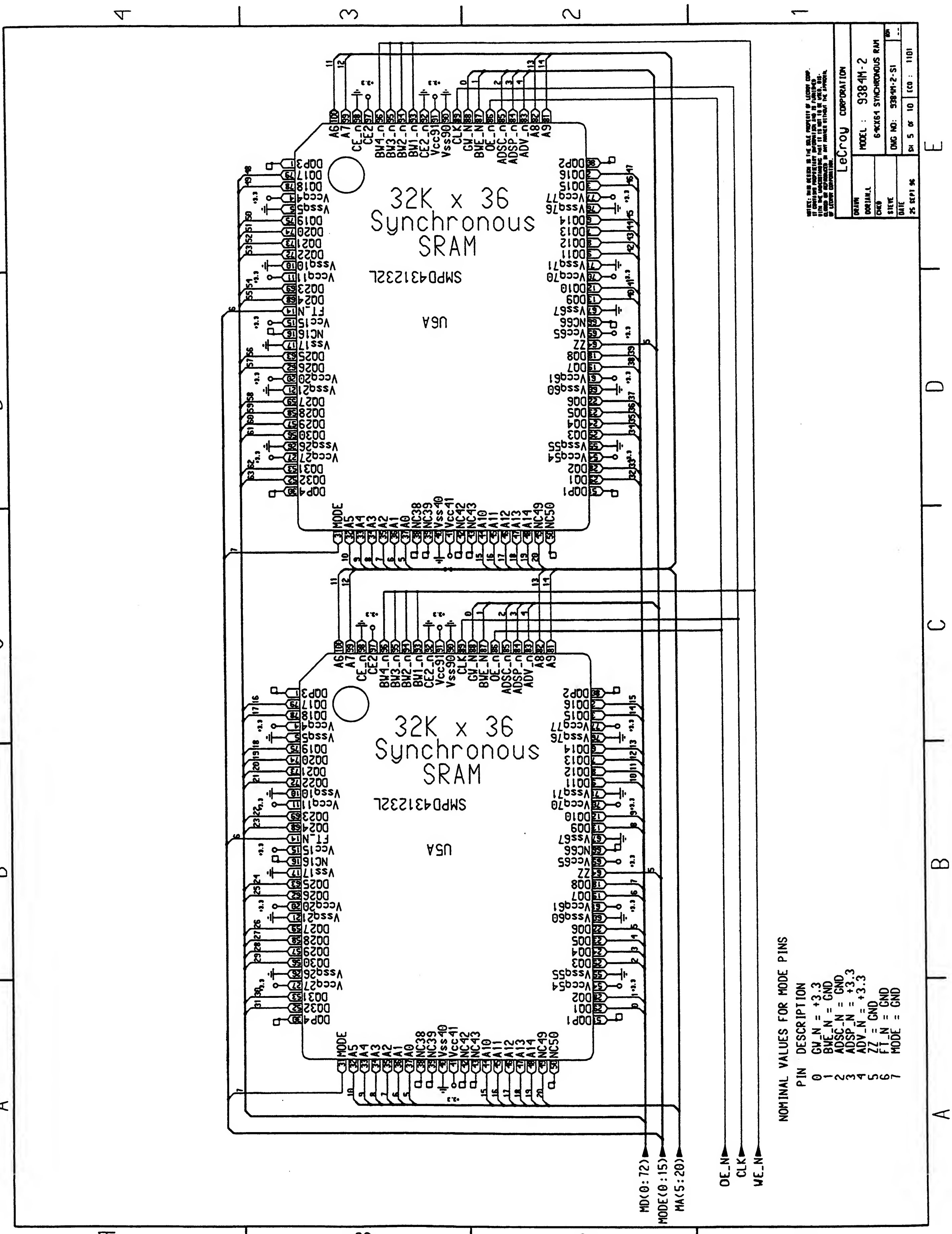
LeCroy CORPORATION
DRAWN DORIAN.L
CHKD STEVE
DATE 25 SEPT 96
MODEL : 9384M-2
64KX64 SYNCHRONOUS RAM
DWG NO: 9384M-2-S1
REV --
SH 3 OF 10
ECO : 1101
1
2
3
4
A
B
C
D
E



NOMINAL VALUES FOR MODE PINS

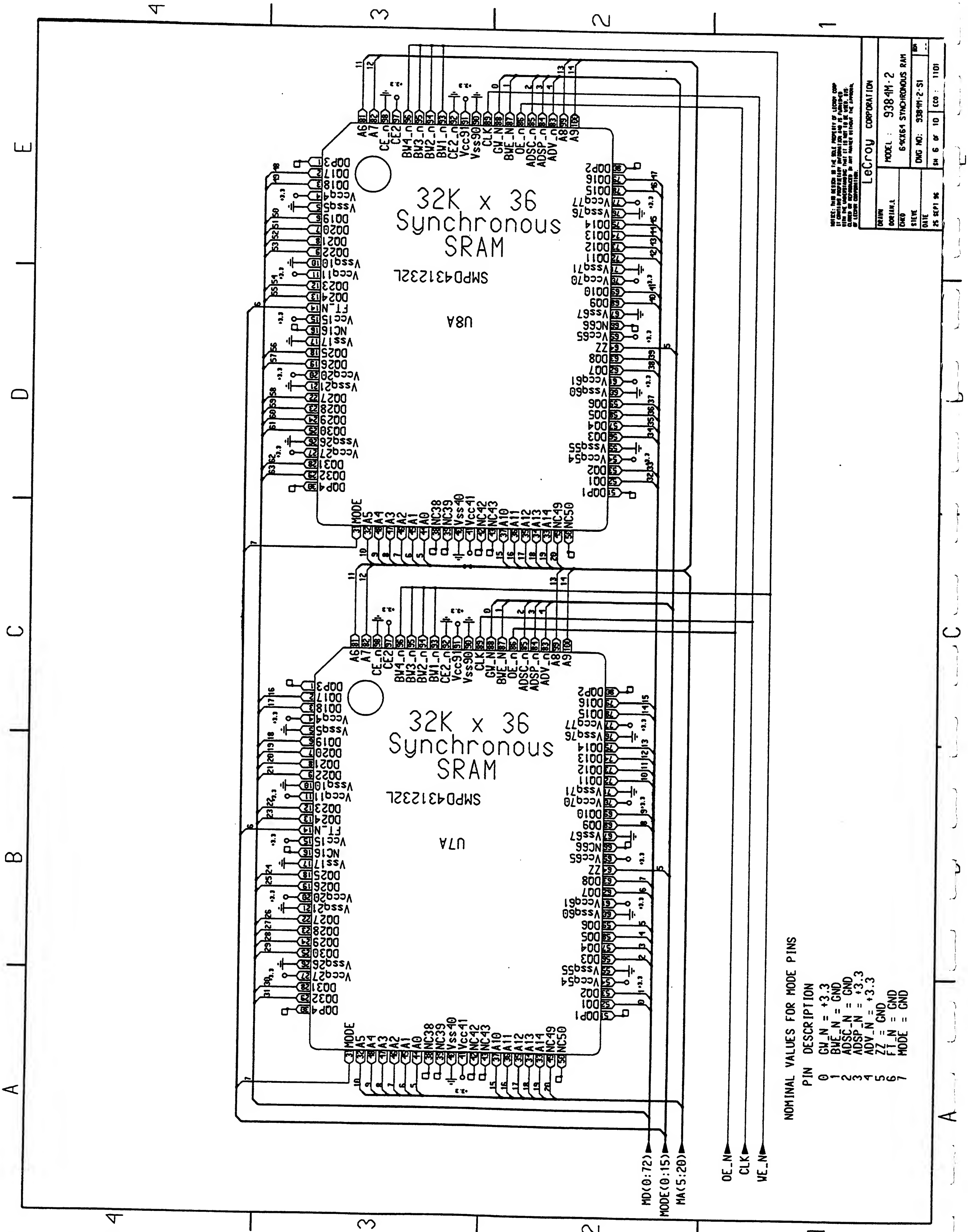
PIN	DESCRIPTION
0	GW_N = +3.3
1	BWE_N = GND
2	ADSC_N = GND
3	ADSP_N = +3.3
4	ADV_N = +3.3
5	ZZ = GND
6	FT_N = GND
7	MODE = GND

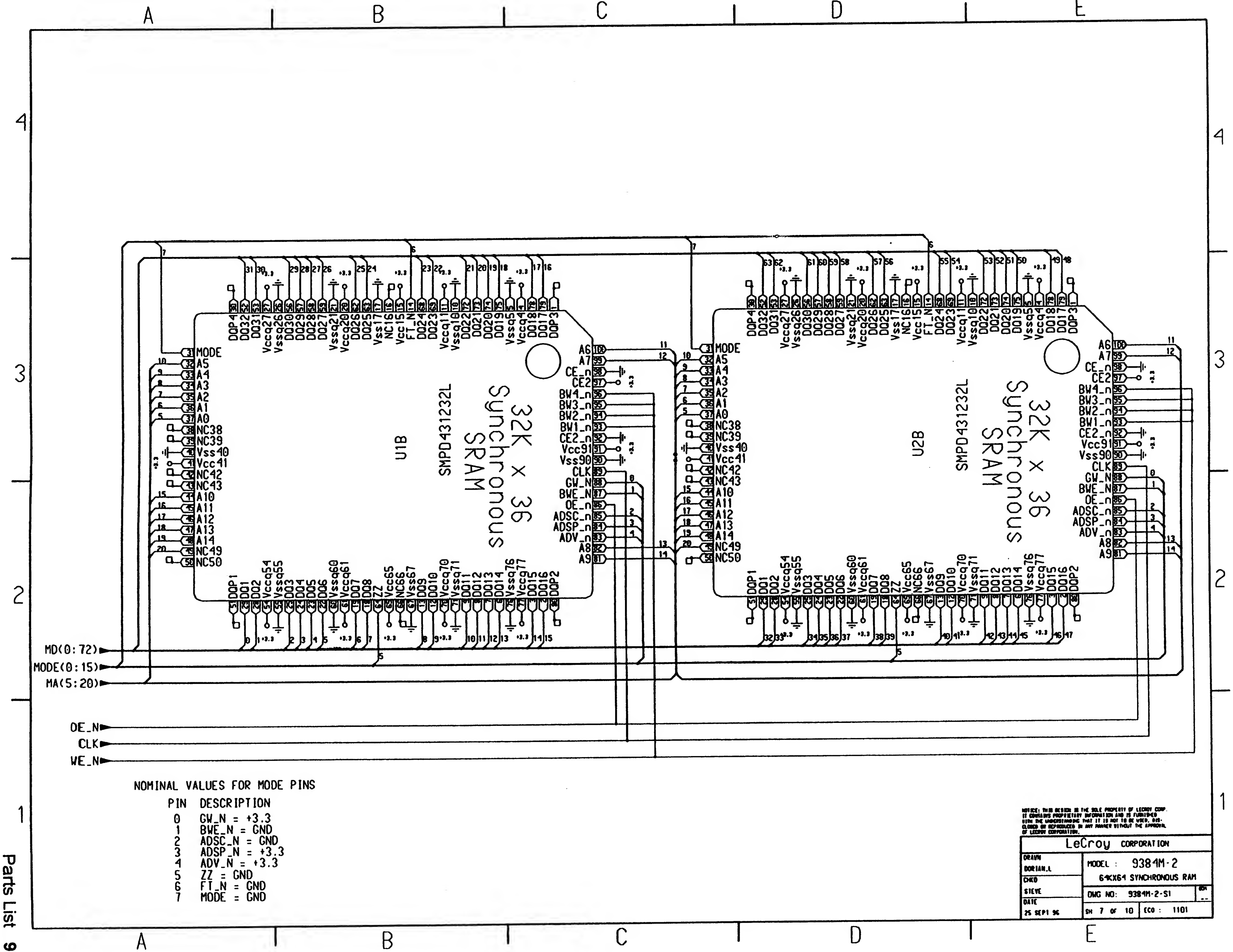


NOMINAL VALUES FOR MODE PINS

PIN DESCRIPTION
0 GW_N = +3.3
1 BWE_N = GND
2 ADSC_N = GND
3 ADSP_N = +3.3
4 ADV_N = +3.3
5 ZZ = GND
6 FT_N = GND
7 MODE = GND

LeCroy CORPORATION
MODEL : 9384M-2
64KX64 SYNCHRONOUS RAM
DWG NO: 9384M-2-S1
SH 5 OF 10
ECO : 1101
DRAWN DORIAN.L
CHKD STEVE
DATE 25 SEPT 96


32K x 36 Synchronous SRAM
SMPD431232L
U8A
U7A
MD(0:72)
MODE(0:15)
MA(5:20)
OE_N
CLK
WE_N
NOMINAL VALUES FOR MODE PINS
PIN DESCRIPTION
0 GW_N = +3.3
1 BWE_N = GND
2 ADSC_N = GND
3 ADSP_N = +3.3
4 ADV_N = +3.3
5 ZZ = GND
6 FT_N = GND
7 MODE = GND
LeCroy CORPORATION
MODEL : 9384M-2
64KX64 SYNCHRONOUS RAM
DWG NO: 9384M-2-S1
SH 6 OF 10
ECO : 1101
DRAWN DORIAN.L
CHKD STEVE
DATE 25 SEP 96



NOMINAL VALUES FOR MODE PINS

PIN	DESCRIPTION
0	GW_N = +3.3
1	BWE_N = GND
2	ADSC_N = GND
3	ADSP_N = +3.3
4	ADV_N = +3.3
5	ZZ = GND
6	FT_N = GND
7	MODE = GND

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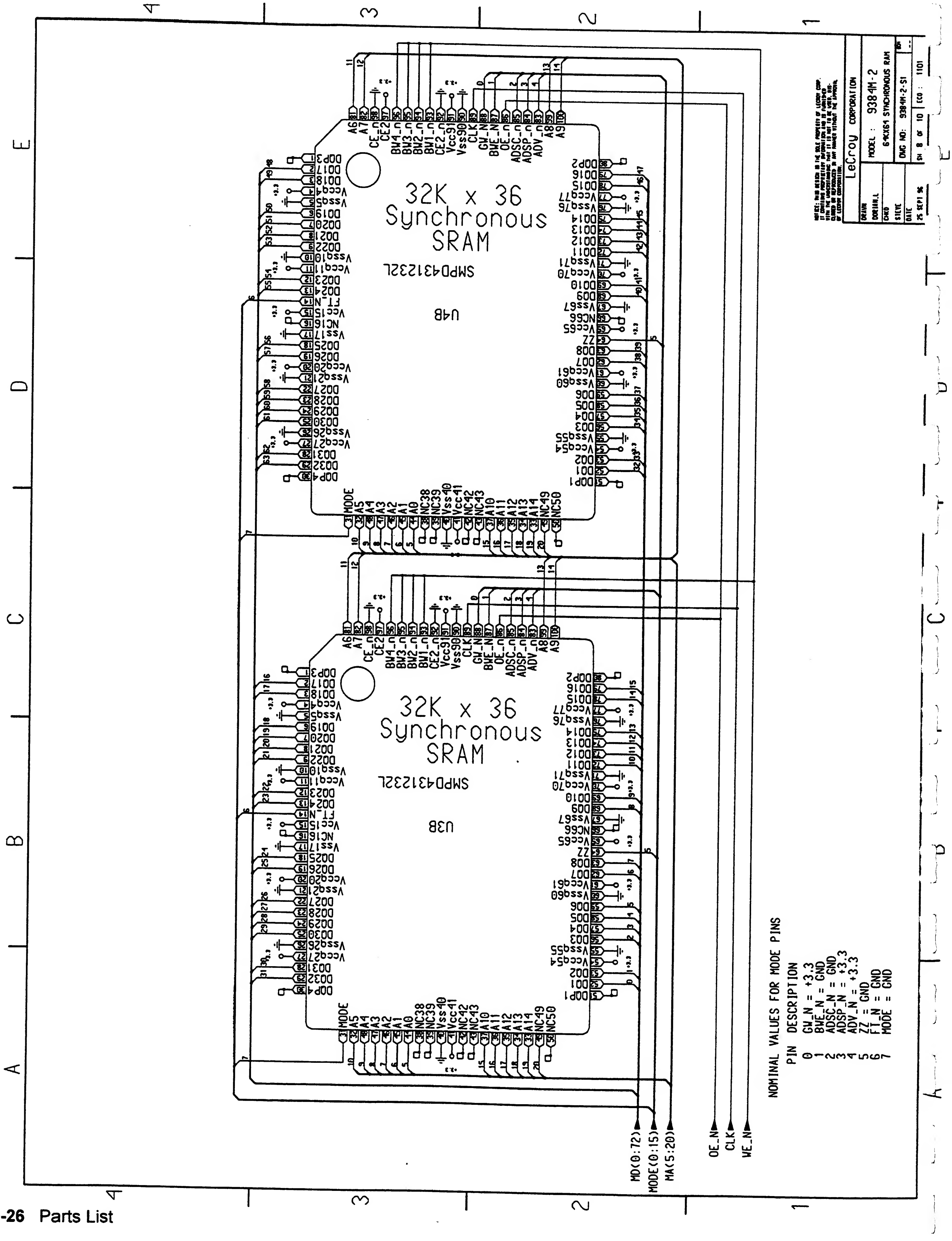
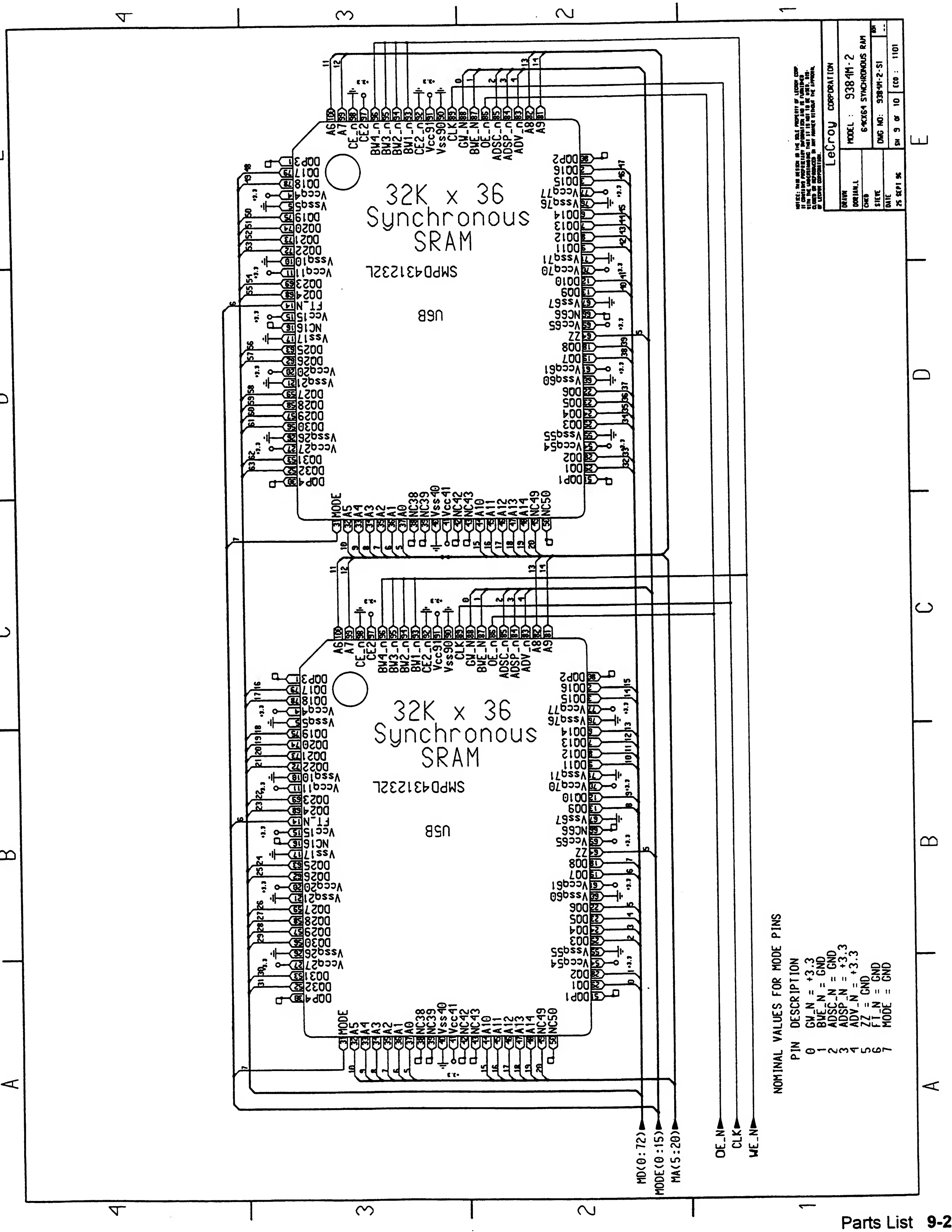
LeCroy CORPORATION

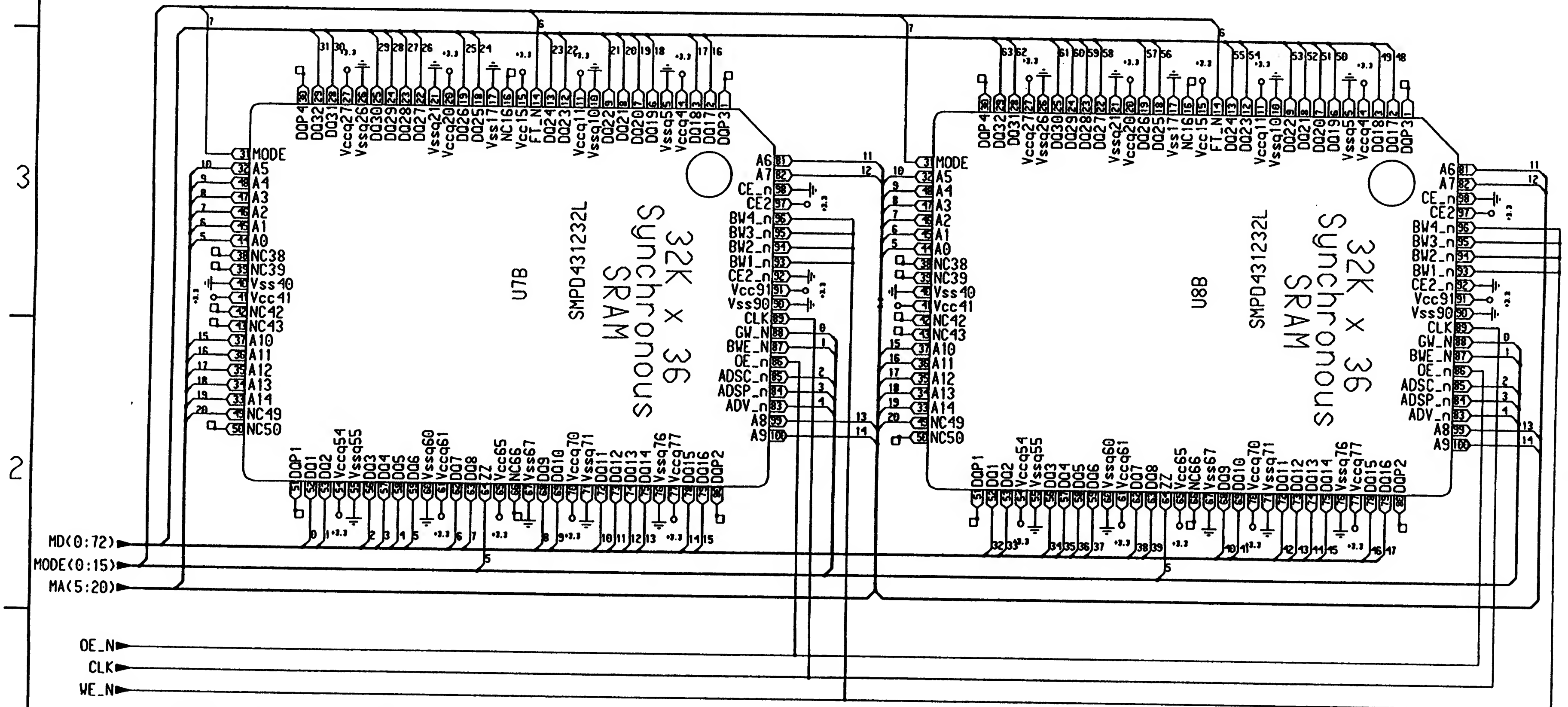
DRAWN DORIAN.L
CHKD STEVE
DATE 25 SEP1 96
MODEL : 9384M-2
64KX64 SYNCHRONOUS RAM
DWG NO: 9384M-2-S1
REV --
SH 7 OF 10
ECO : 1101


32K x 36
Synchronous
SRAM
SMPD431232L
U4B
U3B
MD(0:72)
MODE(0:15)
MA(5:20)
OE_N
CLK
WE_N
NOTICE: THIS DESIGN IS THE SOLE PROPERTY OF LECROY CORP. IT CONTAINS PROPRIETARY INFORMATION AND IS FURNISHED WITH THE UNDERSTANDING THAT IT IS NOT TO BE USED, DISCLOSED OR REPRODUCED IN ANY MANNER WITHOUT THE APPROVAL OF LECROY CORPORATION.
LeCroy CORPORATION
DRAWN DORIAN.L
CHKD STEVE
DATE 25 SEPT 96
MODEL : 9384M-2
64KX64 SYNCHRONOUS RAM
DWG NO: 9384M-2-S1
SH 8 OF 10
ECO : 1101

NOMINAL VALUES FOR MODE PINS

PIN	DESCRIPTION
0	GW_N = +3.3
1	BWE_N = GND
2	ADSC_N = GND
3	ADSP_N = +3.3
4	ADV_N = +3.3
5	ZZ = GND
6	FT_N = GND
7	MODE = GND


32K x 36
Synchronous
SRAM
SMPD431232L
U6B
32K x 36
Synchronous
SRAM
SMPD431232L
U5B
MD(0:72)
MODE(0:15)
MA(5:20)
OE_N
CLK
WE_N
NOMINAL VALUES FOR MODE PINS
PIN DESCRIPTION
0 GW_N = +3.3
1 BWE_N = GND
2 ADSC_N = GND
3 ADSP_N = +3.3
4 ADV_N = +3.3
5 ZZ = GND
6 FT_N = GND
7 MODE = GND
LeCroy CORPORATION
MODEL: 9384M-2
64KX64 SYNCHRONOUS RAM
DWG NO: 9384M-2-S1
SH 9 OF 10
ECO: 1101
DRAWN DORIAN.L
CHKD STEVE
DATE 25 SEPT 96
A
B
C
D
E
1
2
3
4



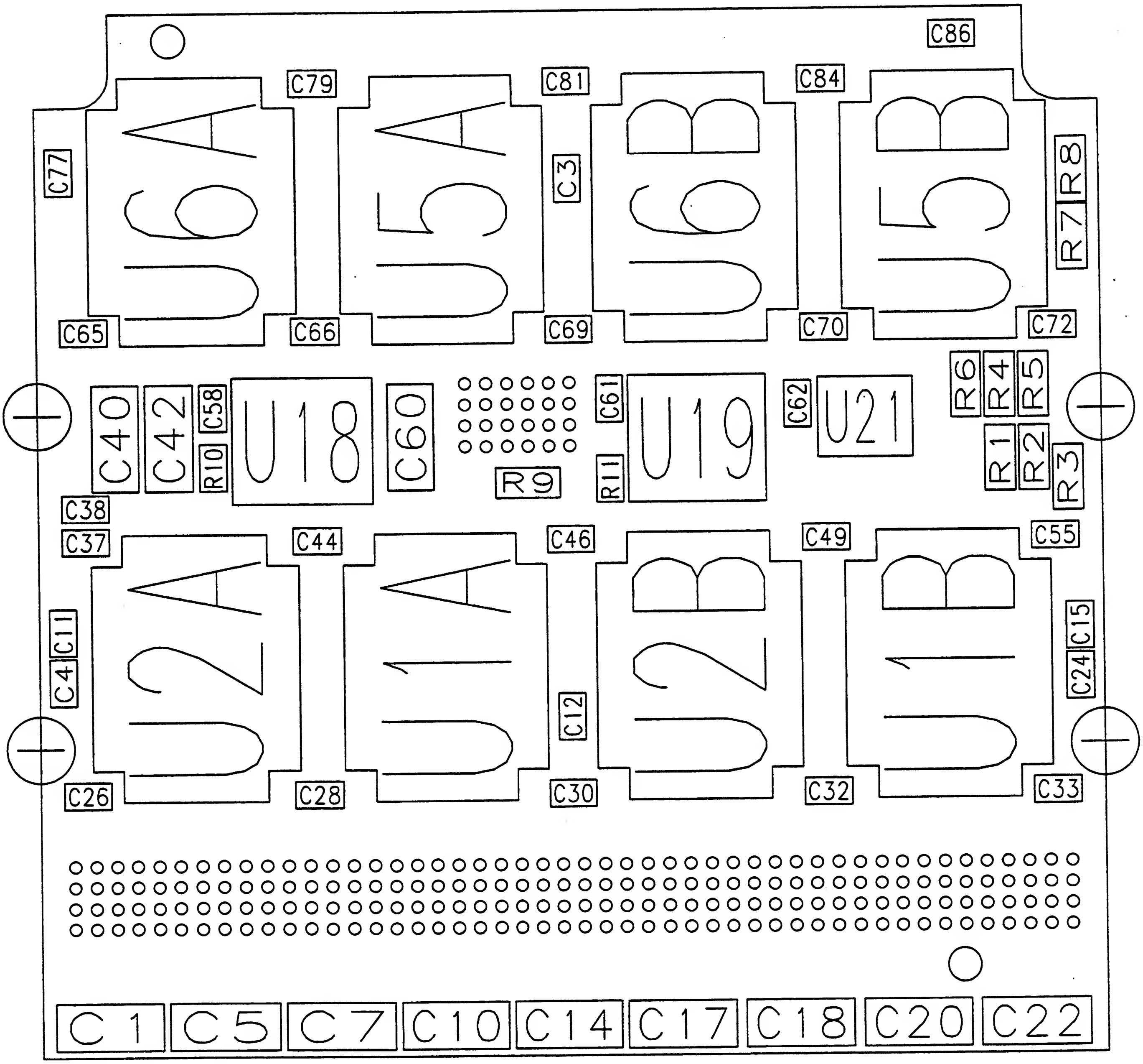
NOMINAL VALUES FOR MODE PINS

PIN	DESCRIPTION
0	GW_N = +3.3
1	BWE_N = GND
2	ADSC_N = GND
3	ADSP_N = +3.3
4	ADV_N = +3.3
5	ZZ = GND
6	FT_N = GND
7	MODE = GND

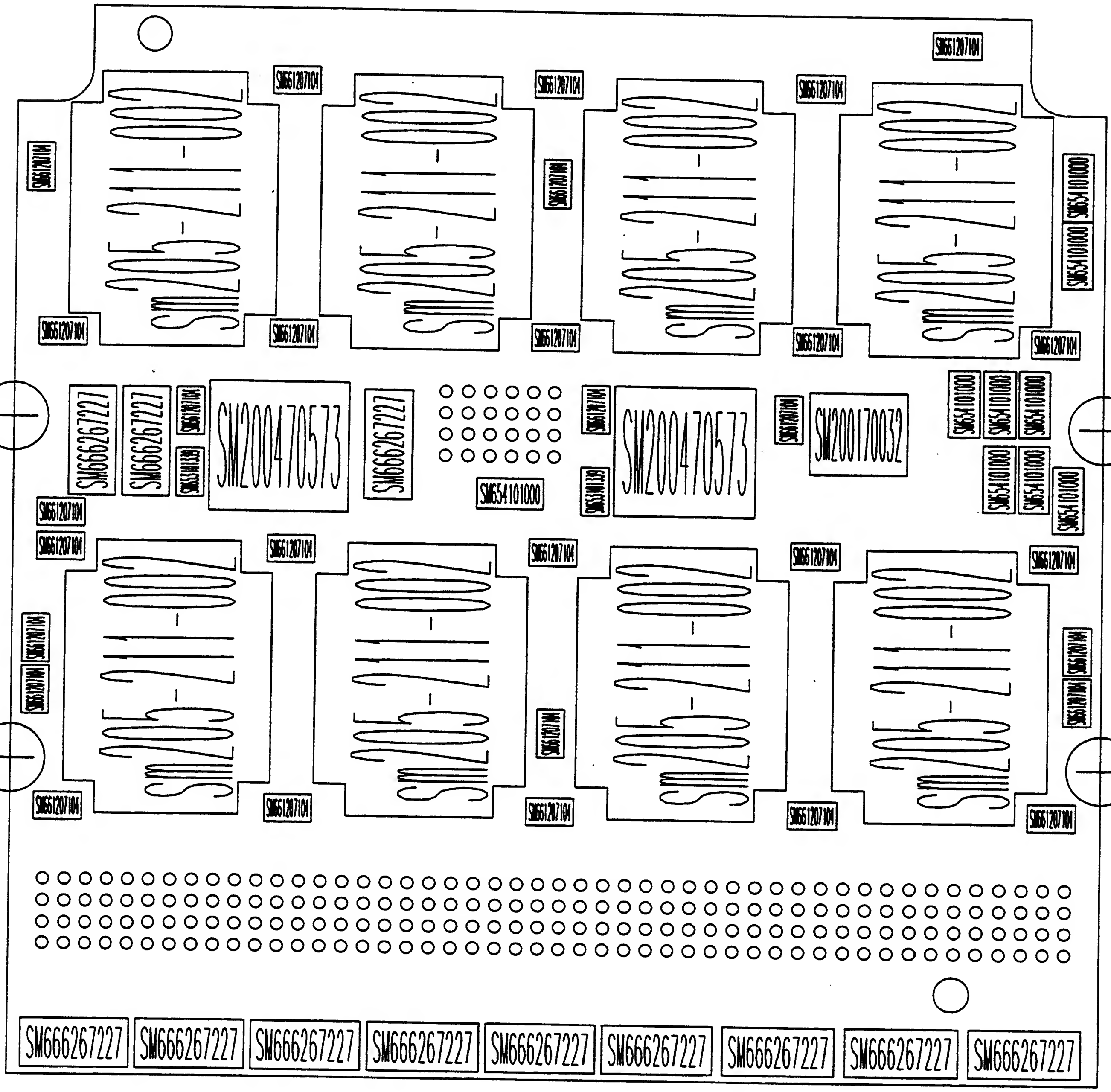
LeCroy CORPORATION

DRAWN DORIAN.L	MODEL : 9384M-2 64KX64 SYNCHRONOUS RAM		
CHKD STEVE	DWG NO: 9384M-2-S1		--
DATE 25 SEPT 96	SH 10 OF 10	ECO . 1101	

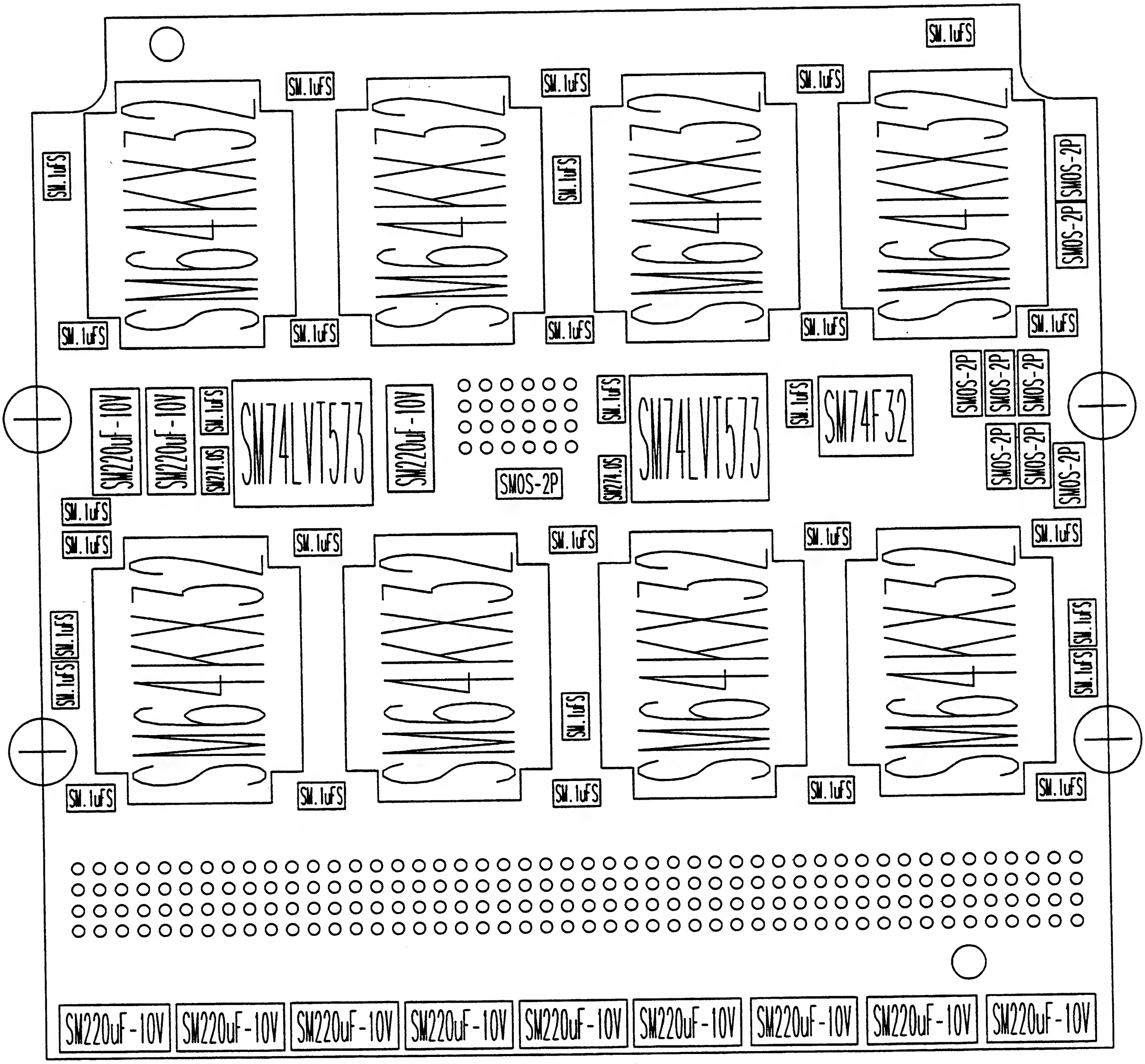
9384M-2 Rev B Side 1



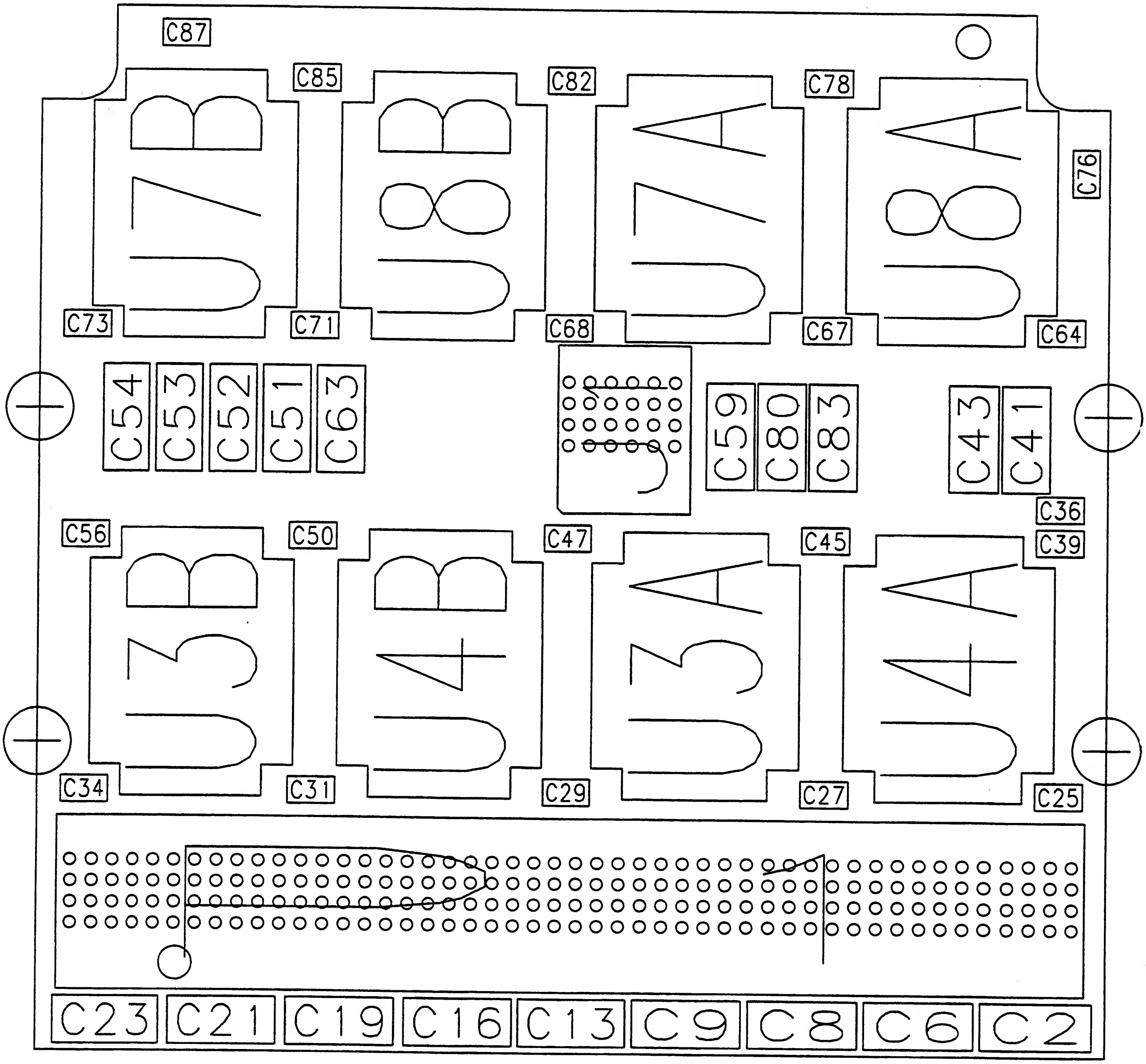
9384M-2 Rev B Side 1



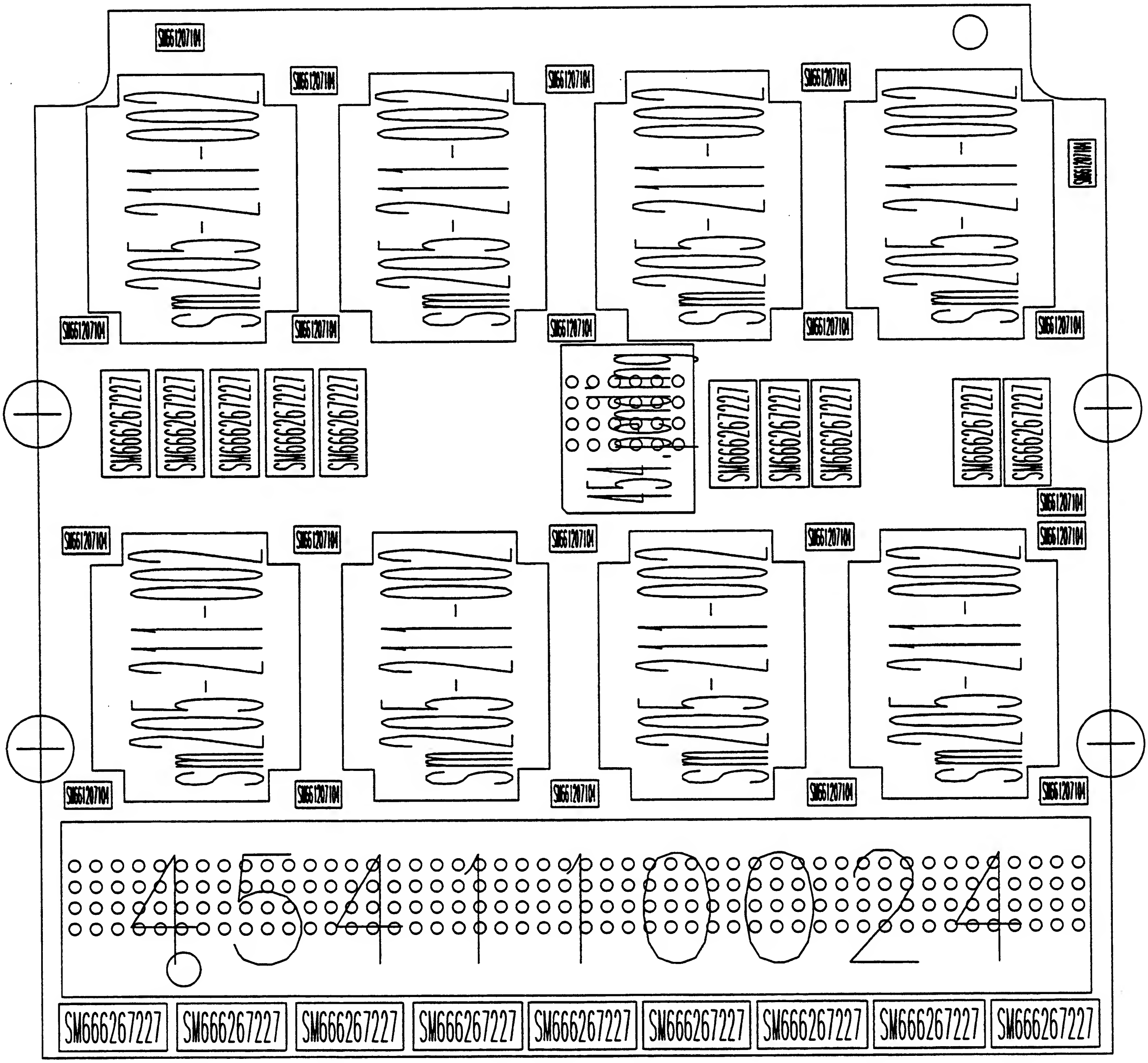
9384M-2 Rev B Side 1



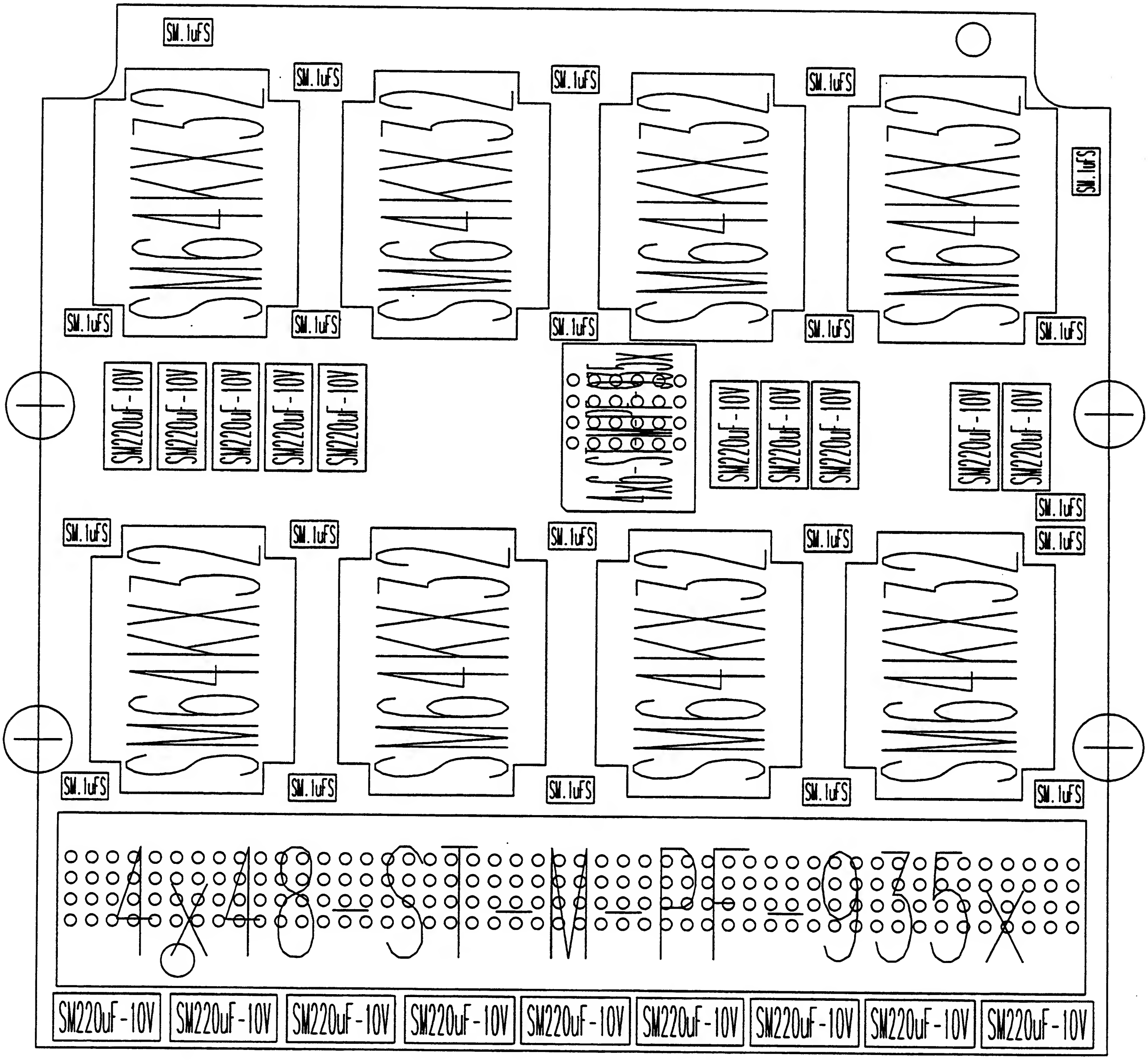
9384M-2 Rev B Side 2



9384M-2 Rev B Side 2



9384M-2 Rev B Side 2

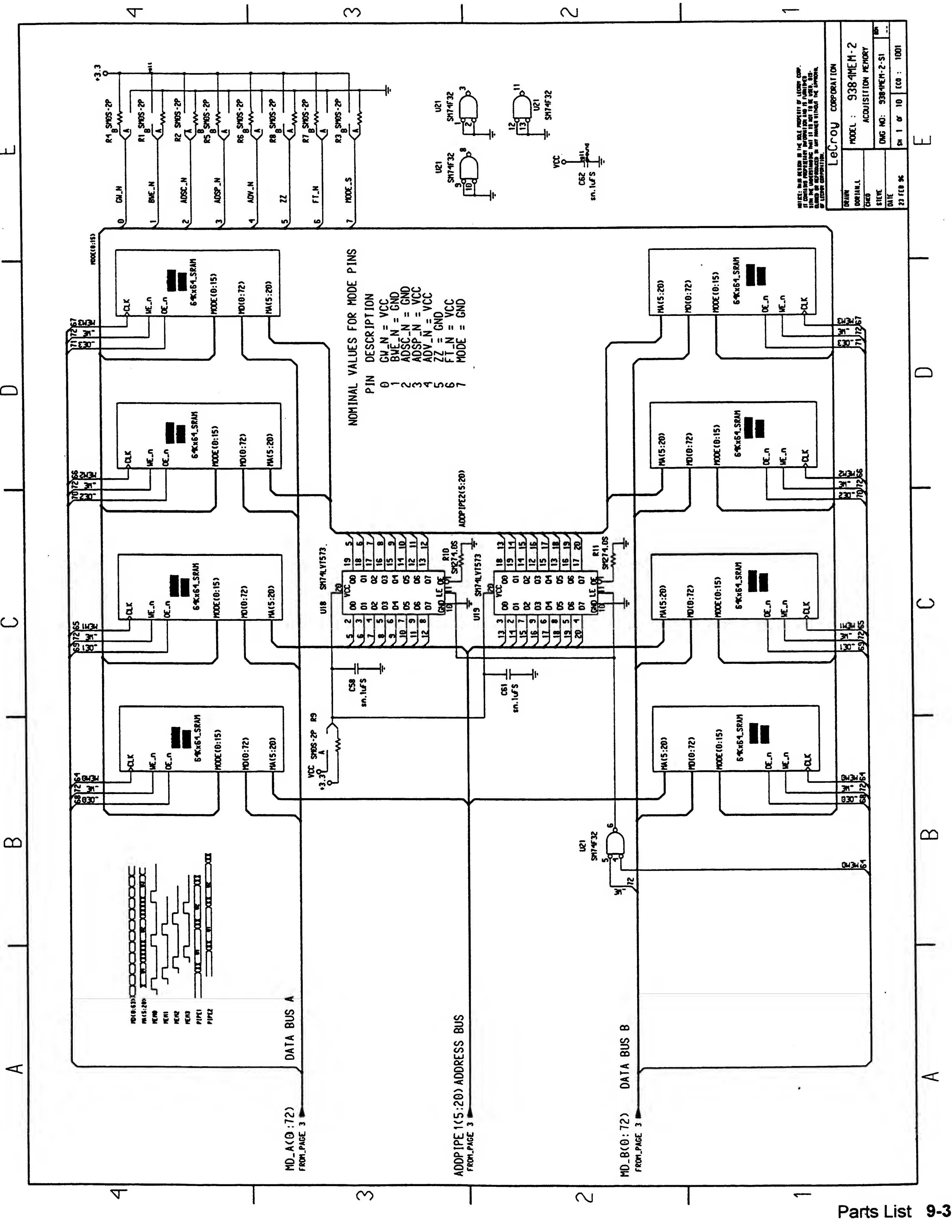


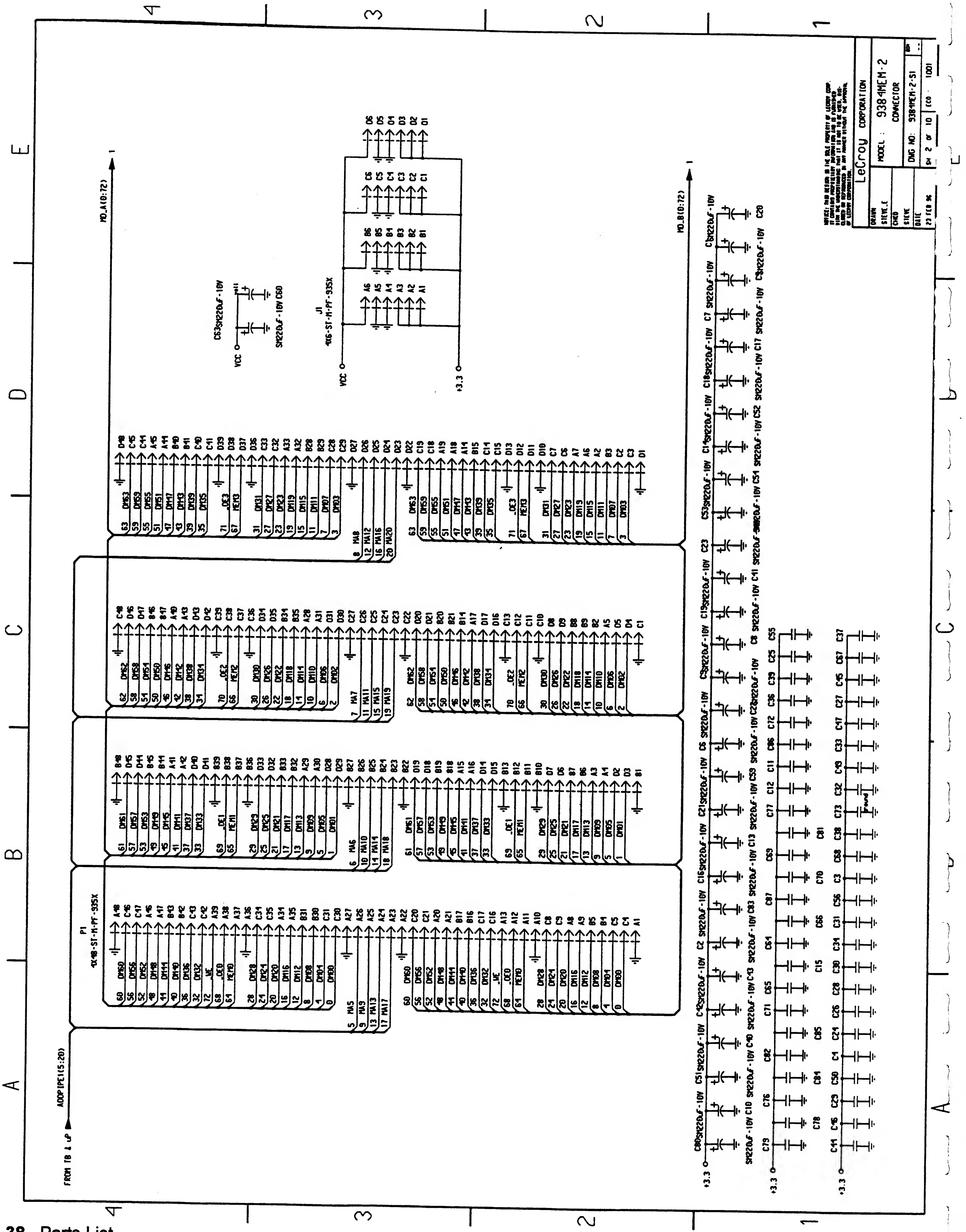
PART: 9384M-2 **DESC : Acquisition Memory Card with 2 X 500K**

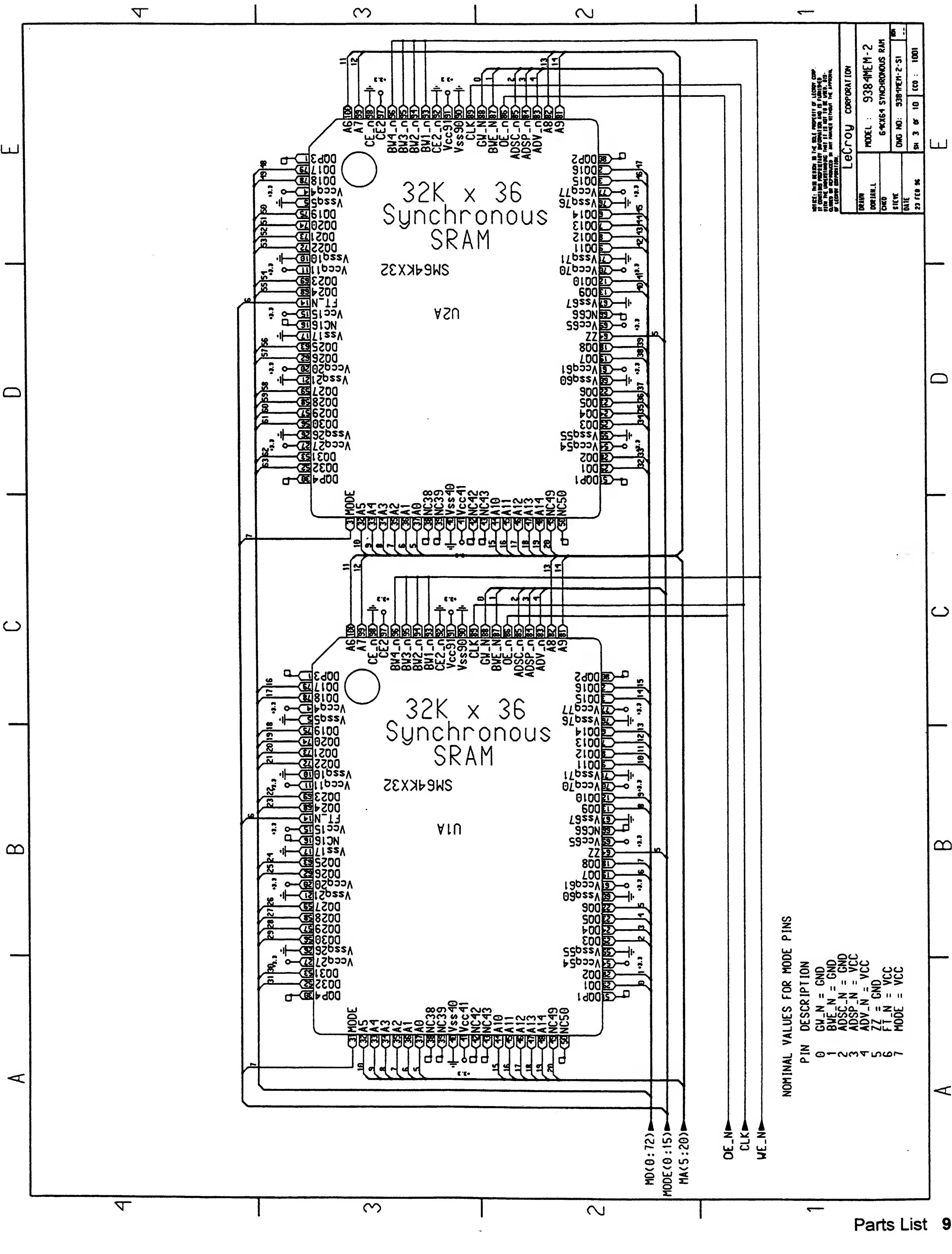
Location	Part Number	Description
C1	SM666267227	SM220UF
C2	SM666267227	SM220UF
C3	SM661207104	SM.1UF
C4	SM661207104	SM.1UF
C5	SM666267227	SM220UF
C6	SM666267227	SM220UF
C7	SM666267227	SM220UF
C8	SM666267227	SM220UF
C9	SM666267227	SM220UF
C10	SM666267227	SM220UF
C11	SM661207104	SM.1UF
C12	SM661207104	SM.1UF
C13	SM666267227	SM220UF
C14	SM666267227	SM220UF
C15	SM661207104	SM.1UF
C16	SM666267227	SM220UF
C17	SM666267227	SM220UF
C18	SM666267227	SM220UF
C19	SM666267227	SM220UF
C20	SM666267227	SM220UF
C21	SM666267227	SM220UF
C22	SM666267227	SM220UF
C23	SM666267227	SM220UF
C24	SM661207104	SM.1UF
C25	SM661207104	SM.1UF
C26	SM661207104	SM.1UF
C27	SM661207104	SM.1UF
C28	SM661207104	SM.1UF
C29	SM661207104	SM.1UF
C30	SM661207104	SM.1UF
C31	SM661207104	SM.1UF
C32	SM661207104	SM.1UF
C33	SM661207104	SM.1UF
C34	SM661207104	SM.1UF
C35	SM666267227	SM220UF
C36	SM661207104	SM.1UF
C37	SM661207104	SM.1UF
C38	SM661207104	SM.1UF
C39	SM661207104	SM.1UF
C40	SM666267227	SM220UF
C41	SM666267227	SM220UF
C42	SM666267227	SM220UF
C43	SM666267227	SM220UF
C44	SM661207104	SM.1UF
C45	SM661207104	SM.1UF
C46	SM661207104	SM.1UF
C47	SM661207104	SM.1UF
C48	SM666267227	SM220UF
C49	SM661207104	SM.1UF
C50	SM661207104	SM.1UF
C51	SM666267227	SM220UF
C52	SM666267227	SM220UF
C53	SM666267227	SM220UF
C54	SM666267227	SM220UF
C55	SM661207104	SM.1UF
C56	SM661207104	SM.1UF
C57	SM666267227	SM220UF
C58	SM661207104	SM.1UF
C59	SM666267227	SM220UF
C60	SM666267227	SM220UF
C61	SM661207104	SM.1UF
C62	SM661207104	SM.1UF
C63	SM666267227	SM220UF
C64	SM661207104	SM.1UF
C65	SM661207104	SM.1UF
C66	SM661207104	SM.1UF
C67	SM661207104	SM.1UF
C68	SM661207104	SM.1UF
C69	SM661207104	SM.1UF
C70	SM661207104	SM.1UF
C71	SM661207104	SM.1UF
C72	SM661207104	SM.1UF
C73	SM661207104	SM.1UF
C74	SM661207104	SM.1UF
C75	SM661207104	SM.1UF
C76	SM661207104	SM.1UF
C77	SM661207104	SM.1UF
C78	SM661207104	SM.1UF
C79	SM661207104	SM.1UF
C80	SM666267227	SM220UF
C81	SM661207104	SM.1UF
C82	SM661207104	SM.1UF
C83	SM666267227	SM220UF
C84	SM661207104	SM.1UF
C85	SM661207104	SM.1UF
C86	SM661207104	SM.1UF

PART: 9384M-2 **DESC : Acquisiton Memory Card with 2 X 500K**

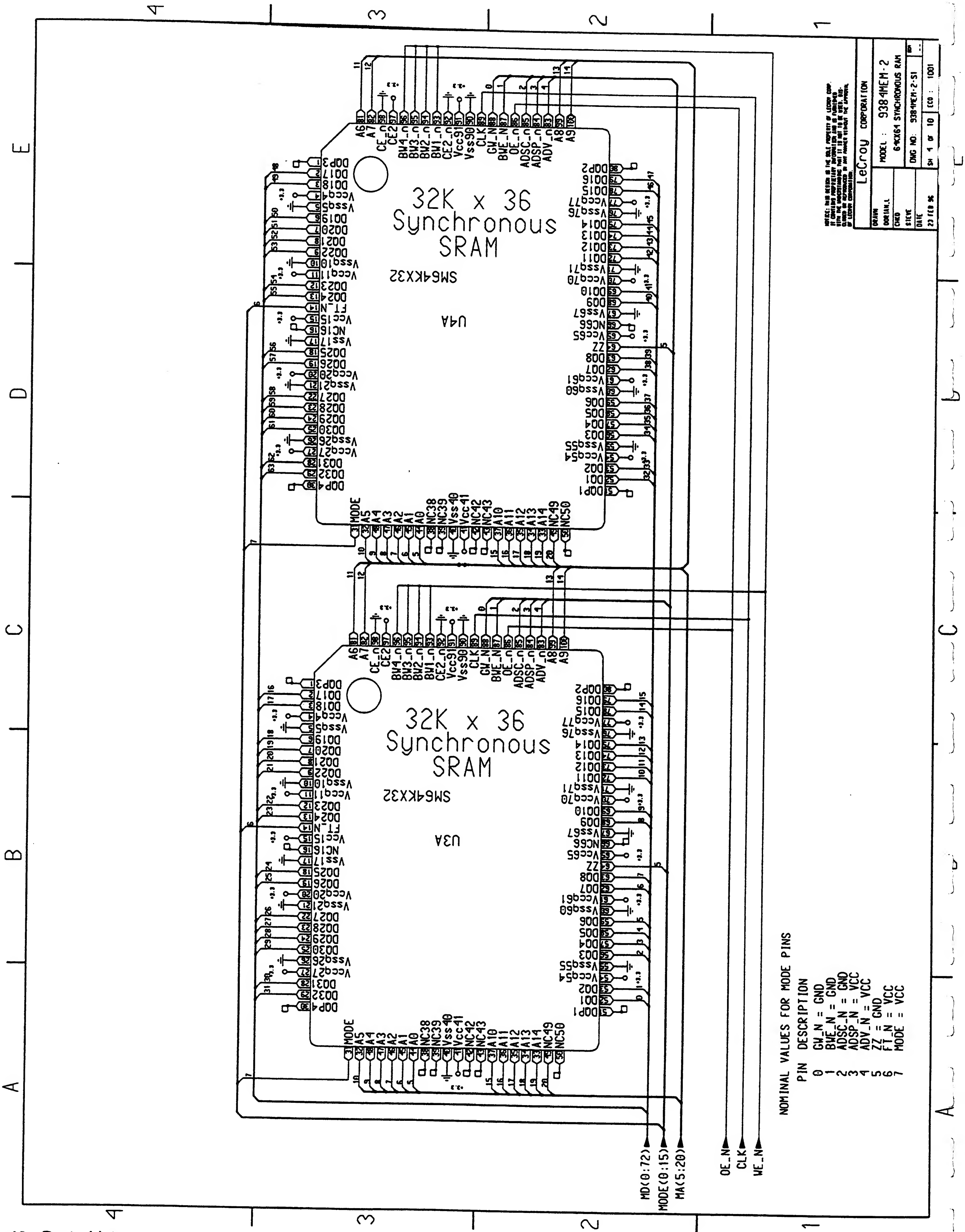
Location	Part Number	Description	Location	Part Number	Description
C87	SM661207104	SM.1UF	U5	SM191160750	SM75OHMRC
J1	454110024	2MM HDR	U5A	SM205211001	SM32K SRAM
P1	454110024	2MM HDR	U5B	SM205211001	SM32K SRAM
R1	SM654101000	SMZEROOHM	U6	SM191160750	SM75OHMRC
R2	SM654101000	SMZEROOHM	U6A	SM205211001	SM32K SRAM
R3	SM654101000	SMZEROOHM	U6B	SM205211001	SM32K SRAM
R4	SM654101000	SMZEROOHM	U7	SM191160750	SM75OHMRC
R5	SM654101000	SMZEROOHM	U7A	SM205211001	SM32K SRAM
R6	SM654101000	SMZEROOHM	U7B	SM205211001	SM32K SRAM
R7	SM654101000	SMZEROOHM	U8	SM191160750	SM75OHMRC
R8	SM654101000	SMZEROOHM	U8A	SM205211001	SM32K SRAM
R9	SM652101750	SM75.0OHM	U8B	SM205211001	SM32K SRAM
R10	SM652101750	SM75.0OHM	U9	SM191160750	SM75OHMRC
U1	SM191160750	SM75OHMRC	U10	SM191160750	SM75OHMRC
U1A	SM205211001	SM32K SRAM	U11	SM191160750	SM75OHMRC
U1B	SM205211001	SM32K SRAM	U12	SM191160750	SM75OHMRC
U2	SM191160750	SM75OHMRC	U13	SM191160750	SM75OHMRC
U2A	SM205211001	SM32K SRAM	U14	SM191160750	SM75OHMRC
U2B	SM205211001	SM32K SRAM	U15	SM191160750	SM75OHMRC
U3	SM191160750	SM75OHMRC	U16	SM191160750	SM75OHMRC
U3A	SM205211001	SM32K SRAM	U17	SM191160750	SM75OHMRC
U3B	SM205211001	SM32K SRAM	U18	SM200479573	SM74ABT573
U4	SM191160750	SM75OHMRC	U19	SM200479573	SM74ABT573
U4A	SM205211001	SM32K SRAM	U20	SM191160750	SM75OHMRC
U4B	SM205211001	SM32K SRAM	U21	SM200170032	SM74F32

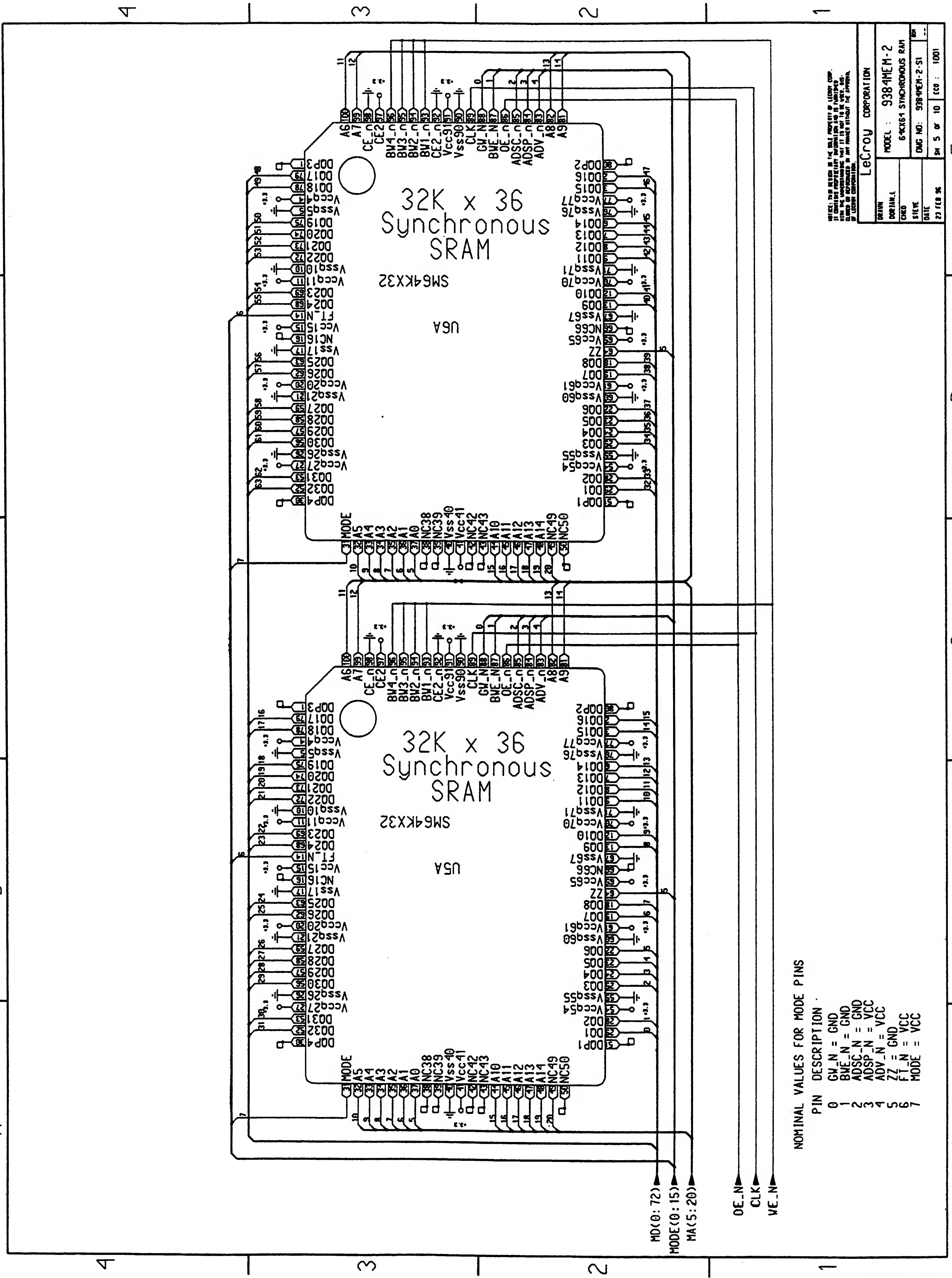

NOMINAL VALUES FOR MODE PINS
PIN DESCRIPTION
0 GW_N = VCC
1 BWE_N = GND
2 ADSC_N = GND
3 ADSP_N = VCC
4 ADV_N = VCC
5 ZZ = GND
6 FT_N = VCC
7 MODE = GND
GW_N
BWE_N
ADSC_N
ADSP_N
ADV_N
ZZ
FT_N
MODE_S
MODE(0:15)
R4 SMDS-2P
R1 SMDS-2P
R2 SMDS-2P
R5 SMDS-2P
R6 SMDS-2P
R8 SMDS-2P
R7 SMDS-2P
R3 SMDS-2P
+3.3
U21 SM74F32
C62 sn.1uFS
VCC
64Kx64_SRAM
CLK
WE_n
OE_n
MODE(0:15)
MD(0:72)
MA(5:20)
U18 SM74LVT573
U19 SM74LVT573
R10 SM274.0S
R11 SM274.0S
C58 sn.1uFS
C61 sn.1uFS
R9 SMDS-2P
ADDPIPE2(5:20)
DATA BUS A
MD_A(0:72)
FROM_PAGE 3
ADDPIPE1(5:20) ADDRESS BUS
FROM_PAGE 3
DATA BUS B
MD_B(0:72)
FROM_PAGE 3
MD(0:63)
MA(5:20)
PIPE1
PIPE2
NOTICE: THIS DESIGN IS THE SOLE PROPERTY OF LECROY CORP. IT CONTAINS PROPRIETARY INFORMATION AND IS FURNISHED WITH THE UNDERSTANDING THAT IT IS NOT TO BE USED, DISCLOSED OR REPRODUCED IN ANY MANNER WITHOUT THE APPROVAL OF LECROY CORPORATION.
LeCroy CORPORATION
MODEL : 9384MEM-2
ACQUISITION MEMORY
DRAWN DORIAN.L
CHKD STEVE
DATE 23 FEB 96
DWG NO: 9384MEM-2-S1
SH 1 OF 10
ECO : 1001
A
B
C
D
E
1
2
3
4

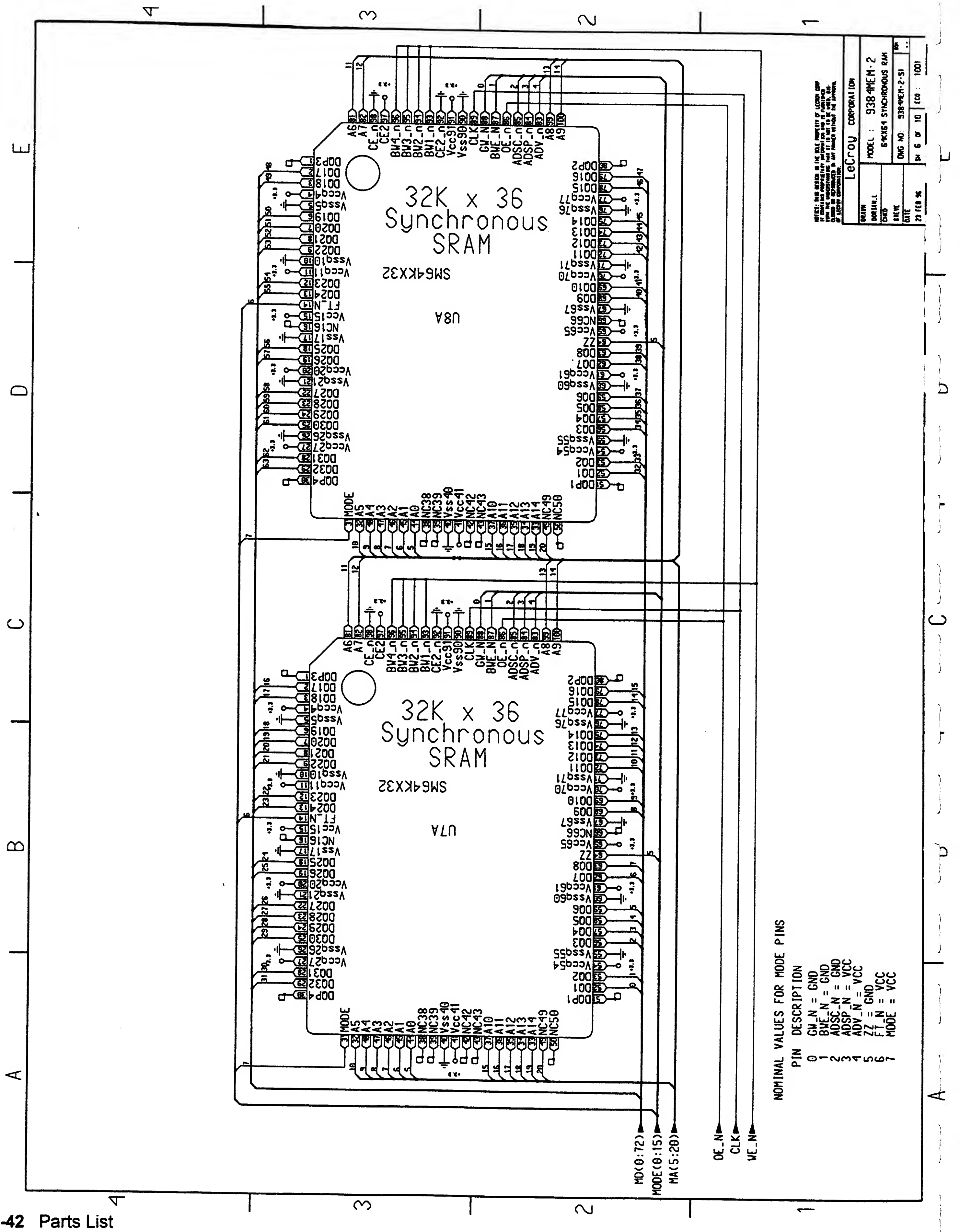

LeCroy CORPORATION
MODEL : 9384MEM-2
CONNECTOR
DWG NO: 9384MEM-2-S1
SH 2 OF 10
ECO 1001
DRAWN STEVE.E
CHKD STEVE
DATE 23 FEB 96
P1
4X48-ST-M-PF-935X
J1
4X6-ST-M-PF-935X
MD_A(0:72)
MD_B(0:72)
ADDPIPE(5:20)
FROM TB & uP
VCC
+3.3
SM220uF-10V
A
B
C
D
E
1
2
3
4

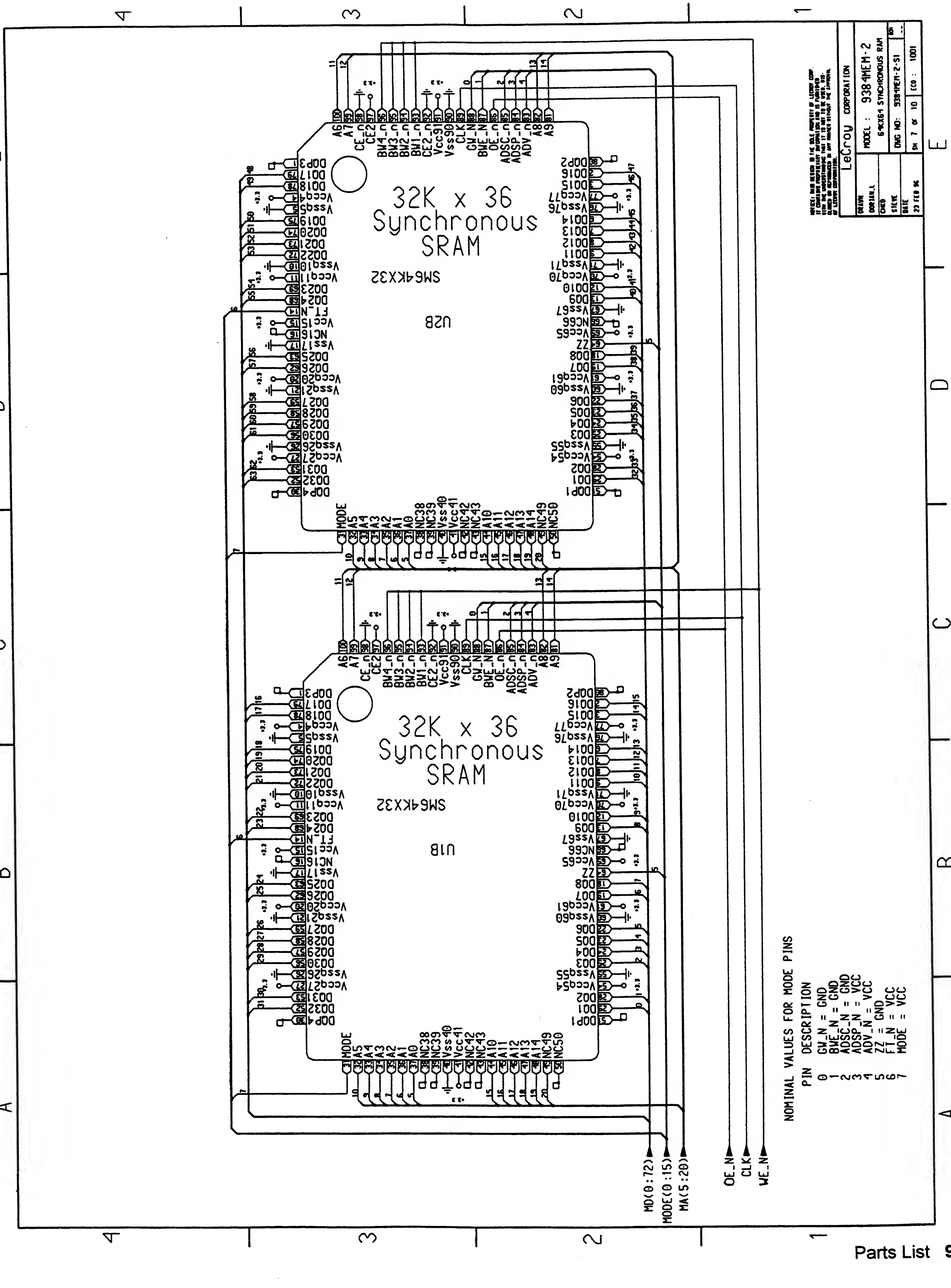

32K x 36
Synchronous
SRAM
SM64KX32
U2A
U1A
MD(0:72)
MODE(0:15)
MA(5:20)
OE_N
CLK
WE_N
NOMINAL VALUES FOR MODE PINS
PIN DESCRIPTION
0 GW_N = GND
1 BWE_N = GND
2 ADSC_N = GND
3 ADSP_N = VCC
4 ADV_N = VCC
5 ZZ = GND
6 FT_N = VCC
7 MODE = VCC
LeCroy CORPORATION
MODEL : 9384MEM-2
64KX64 SYNCHRONOUS RAM
DWG NO: 9384MEM-2-S1
SH 3 OF 10
ECO : 1001
DRAWN DORIAN.L
CHKD STEVE
DATE 23 FEB 96

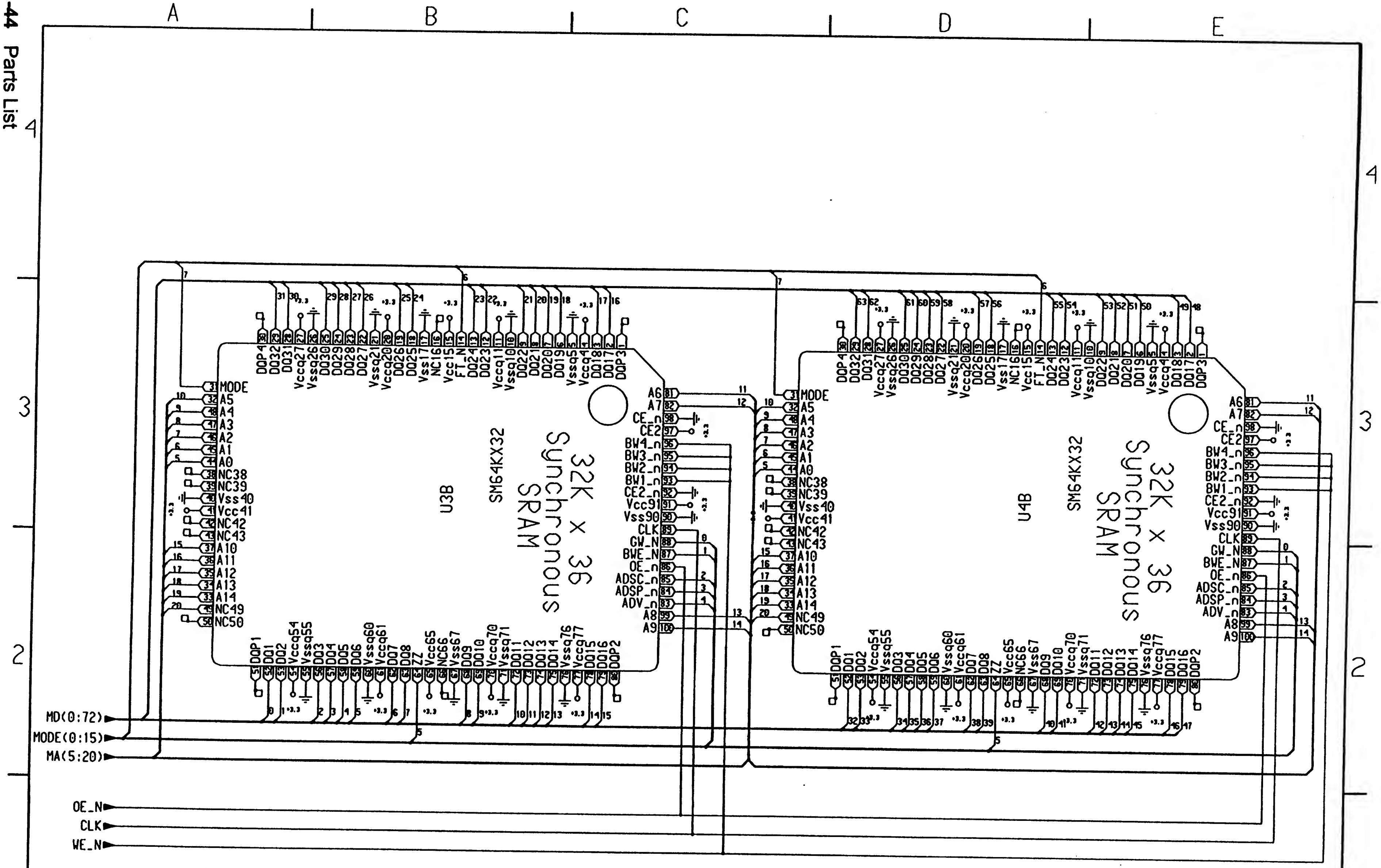
Schematics, Layouts




32K x 36
Synchronous
SRAM
SM64KX32
U6A
U5A
MD(0:72)
MODE(0:15)
MA(5:20)
OE_N
CLK
WE_N
NOMINAL VALUES FOR MODE PINS
PIN DESCRIPTION
0 GW_N = GND
1 BWE_N = GND
2 ADSC_N = GND
3 ADSP_N = VCC
4 ADV_N = VCC
5 ZZ = GND
6 FT_N = VCC
7 MODE = VCC
LeCroy CORPORATION
MODEL : 9384MEM-2
64KX64 SYNCHRONOUS RAM
DRAWN DORIAN.L
CHKD STEVE
DATE 23 FEB 96
DWG NO: 9384MEM-2-S1
SH 5 OF 10
ECO : 1001


32K x 36 Synchronous SRAM
SM64KX32
U8A
32K x 36 Synchronous SRAM
SM64KX32
U7A
A6 A7 CE_n CE2 BW4_n BW3_n BW2_n BW1_n CE2_n Vcc91 Vss90 CLK GW_N BWE_N OE_n ADSC_n ADSP_n ADV_n A8 A9
DQP3 DQ17 DQ18 Vccq4 Vssq5 DQ19 DQ20 DQ21 DQ22 Vssq10 Vccq11 DQ23 DQ24 FT_N Vcc15 NC16 Vss17 DQ25 DQ26 Vccq20 Vssq21 DQ27 DQ28 DQ29 DQ30 Vssq26 Vccq27 DQ31 DQ32 DQP4
MODE A5 A4 A3 A2 A1 A0 NC38 NC39 Vss40 Vcc41 NC42 NC43 A10 A11 A12 A13 A14 NC49 NC50
DQP2 DQ16 DQ15 Vccq77 Vssq76 DQ14 DQ13 DQ12 DQ11 Vssq71 Vccq70 DQ10 DQ9 Vssq67 NC66 Vcc65 ZZ DQ8 DQ7 Vccq61 Vssq60 DQ6 DQ5 DQ4 DQ3 Vssq55 Vccq54 DQ2 DQ1 DQP1
+3.3
MD(0:72)
MODE(0:15)
MA(5:20)
OE_N
CLK
WE_N
NOMINAL VALUES FOR MODE PINS
PIN DESCRIPTION
0 GW_N = GND
1 BWE_N = GND
2 ADSC_N = GND
3 ADSP_N = VCC
4 ADV_N = VCC
5 ZZ = GND
6 FT_N = VCC
7 MODE = VCC
LeCroy CORPORATION
MODEL : 9384MEM-2
64KX64 SYNCHRONOUS RAM
DWG NO: 9384MEM-2-S1
SH 6 OF 10
ECO : 1001
DRAWN DORIAN.L
CHKD STEVE
DATE 23 FEB 96
4 3 2 1
E D C B A


32K x 36 Synchronous SRAM
SM64KX32
U2B
32K x 36 Synchronous SRAM
SM64KX32
U1B
MD(0:72)
MODE(0:15)
MA(5:20)
OE_N
CLK
WE_N
NOMINAL VALUES FOR MODE PINS
PIN DESCRIPTION
0 GW_N = GND
1 BWE_N = GND
2 ADSC_N = GND
3 ADSP_N = VCC
4 ADV_N = VCC
5 ZZ = GND
6 FT_N = VCC
7 MODE = VCC
LeCroy CORPORATION
MODEL : 9384MEM-2
64KX64 SYNCHRONOUS RAM
DWG NO: 9384MEM-2-S1
SH 7 OF 10
ECO : 1001
DRAWN DORIAN.L
CHKD STEVE
DATE 23 FEB 96



NOMINAL VALUES FOR MODE PINS

PIN	DESCRIPTION
0	GW_N = GND
1	BWE_N = GND
2	ADSC_N = GND
3	ADSP_N = VCC
4	ADV_N = VCC
5	ZZ = GND
6	FT_N = VCC
7	MODE = VCC

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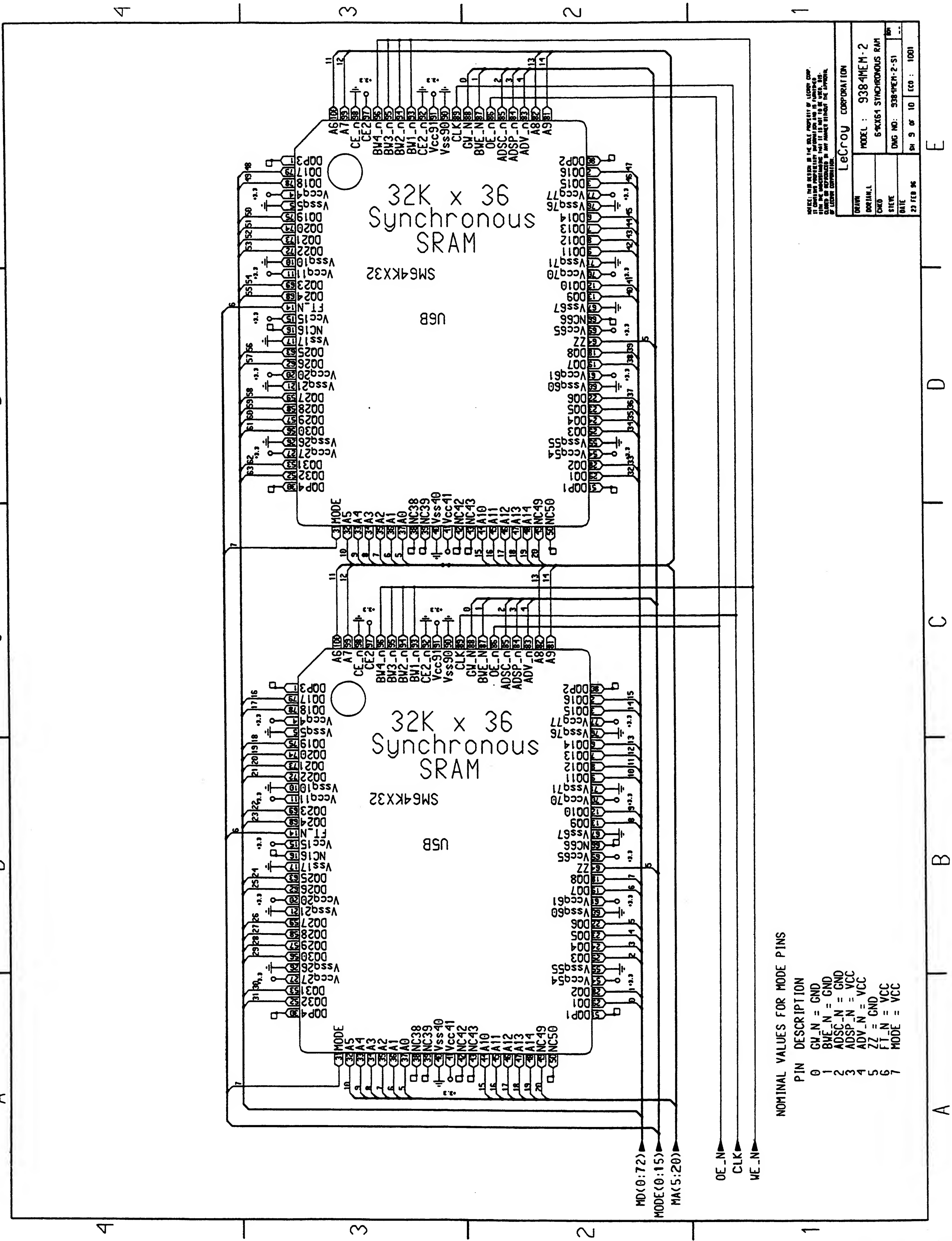
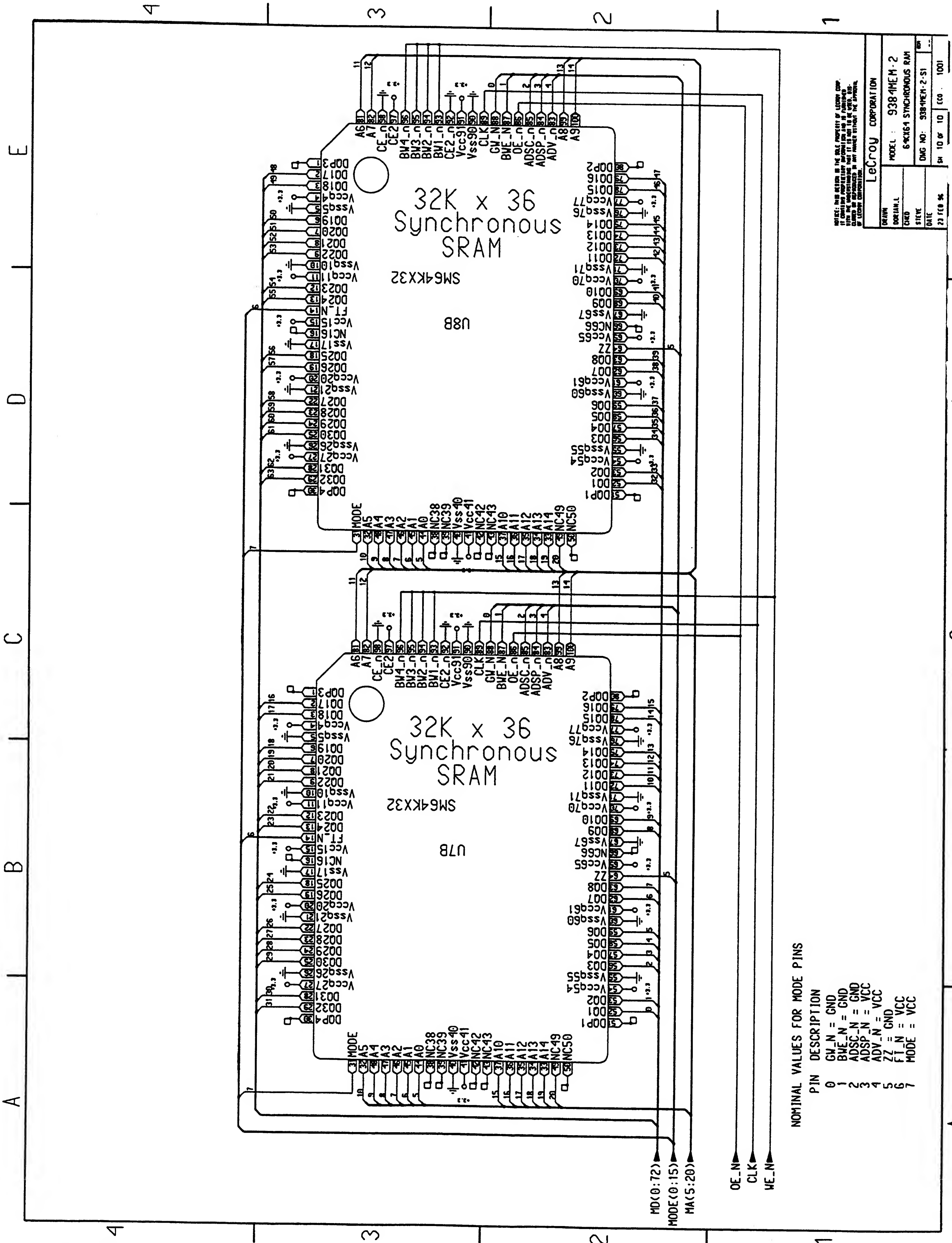
LeCroy CORPORATION			
DRAWN DORIAN.L	MODEL : 9384MEM-2 64KX64 SYNCHRONOUS RAM		
CHKD STEVE			
DATE 23 FEB 96	DWG NO: 9384MEM-2-S1		BOM --
	SH 8 OF 10	ECO 1001	

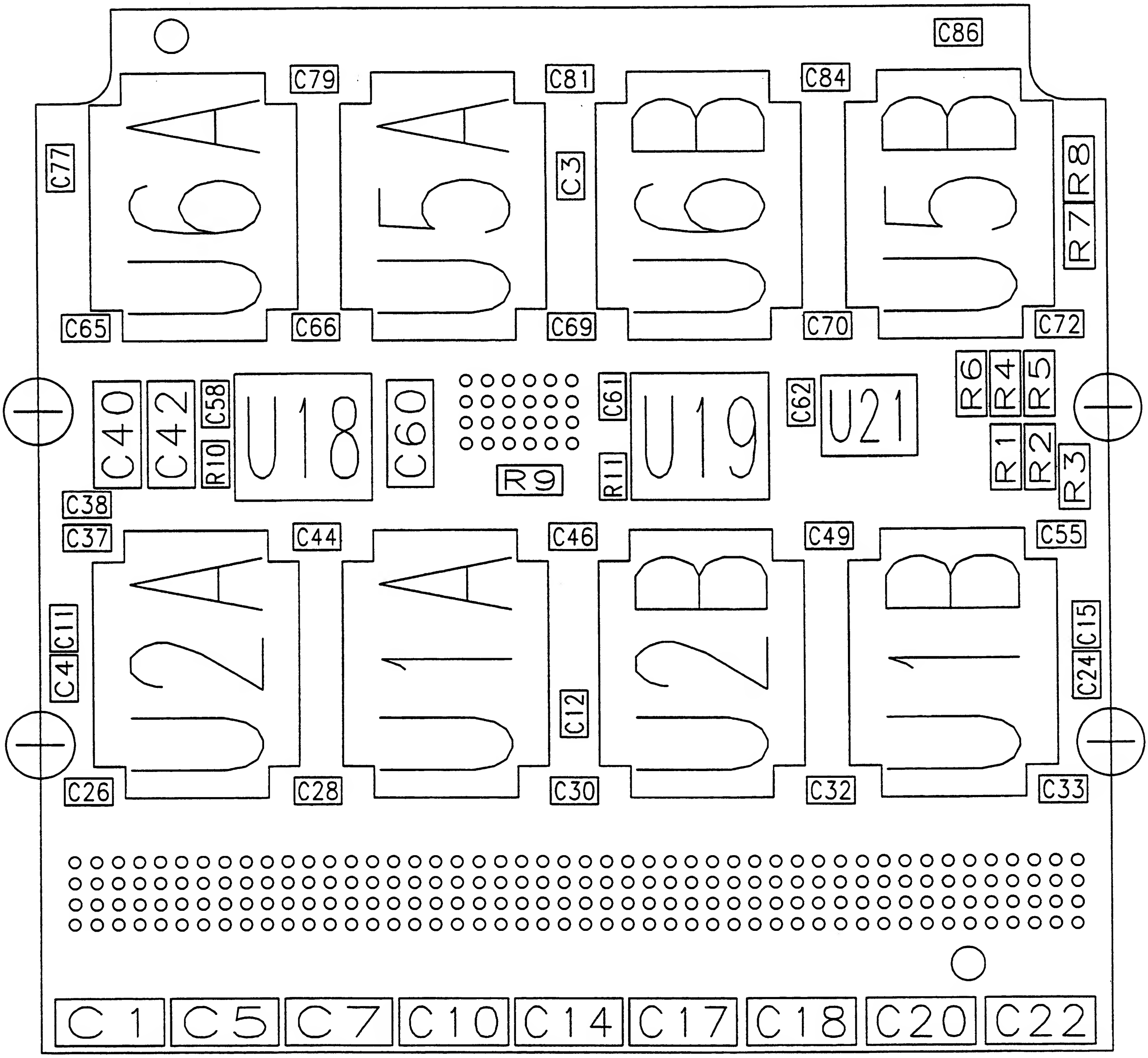

32K x 36
Synchronous
SRAM
SM64KX32
U5B
A6
A7
CE_n
CE2
BW4_n
BW3_n
BW2_n
BW1_n
CE2_n
Vcc91
Vss90
CLK
GW_N
BWE_N
OE_n
ADSC_n
ADSP_n
ADV_n
A8
A9
MODE
A5
A4
A3
A2
A1
A0
NC38
NC39
Vss40
Vcc41
NC42
NC43
A10
A11
A12
A13
A14
NC49
NC50
DQP1
DQP2
DQP3
DQP4
FT_N
ZZ
+3.3
MD(0:72)
MODE(0:15)
MA(5:20)
OE_N
CLK
WE_N
NOMINAL VALUES FOR MODE PINS
PIN DESCRIPTION
0 GW_N = GND
1 BWE_N = GND
2 ADSC_N = GND
3 ADSP_N = VCC
4 ADV_N = VCC
5 ZZ = GND
6 FT_N = VCC
7 MODE = VCC
LeCroy CORPORATION
MODEL : 9384MEM-2
64KX64 SYNCHRONOUS RAM
DWG NO: 9384MEM-2-S1
SH 9 OF 10
ECO : 1001
DRAWN DORJAN.L
CHKD STEVE
DATE 22 FEB 96



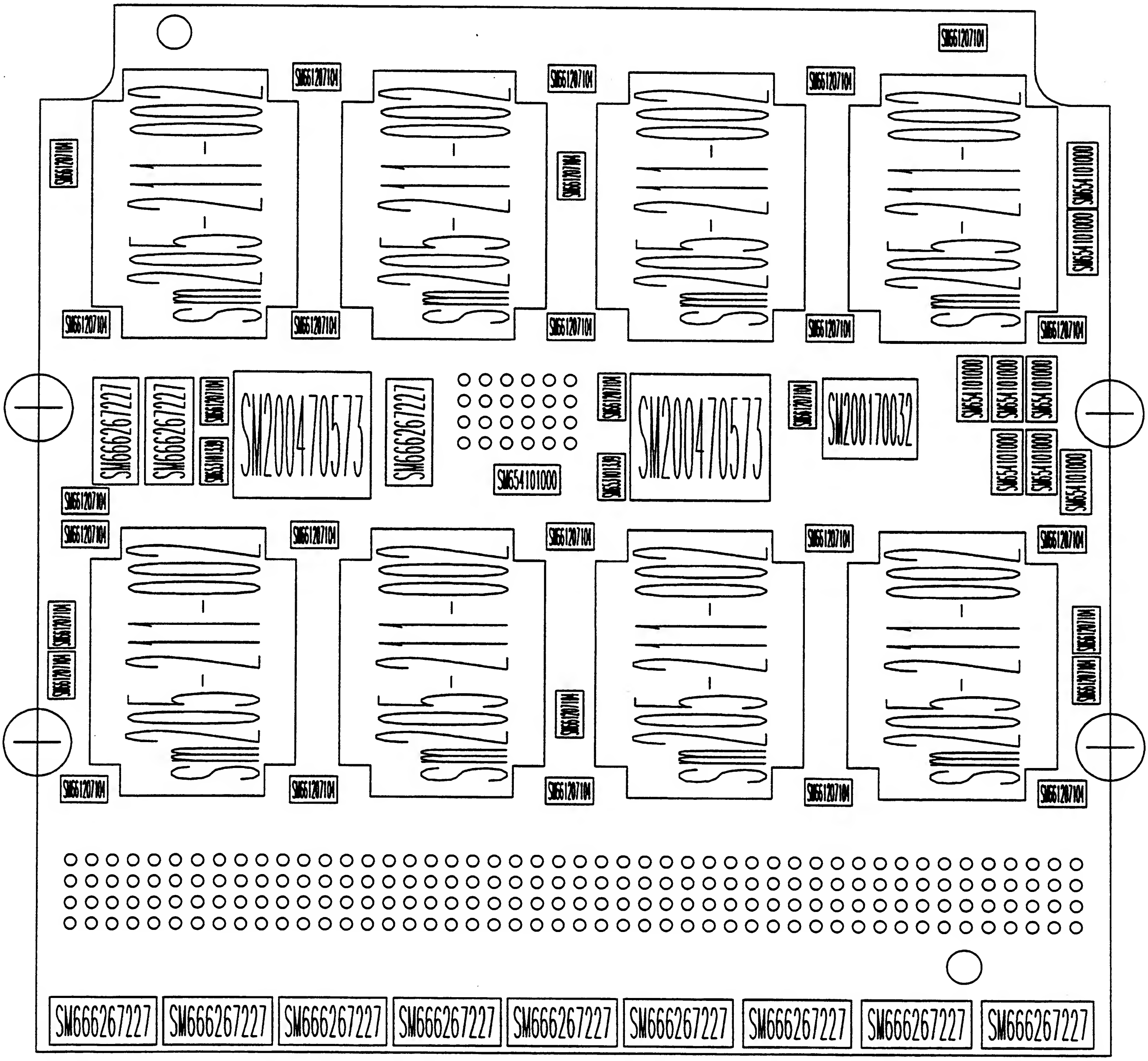
NOMINAL VALUES FOR MODE PINS

PIN	DESCRIPTION
0	GW_N = GND
1	BWE_N = GND
2	ADSC_N = GND
3	ADSP_N = VCC
4	ADV_N = VCC
5	ZZ = GND
6	FT_N = VCC
7	MODE = VCC

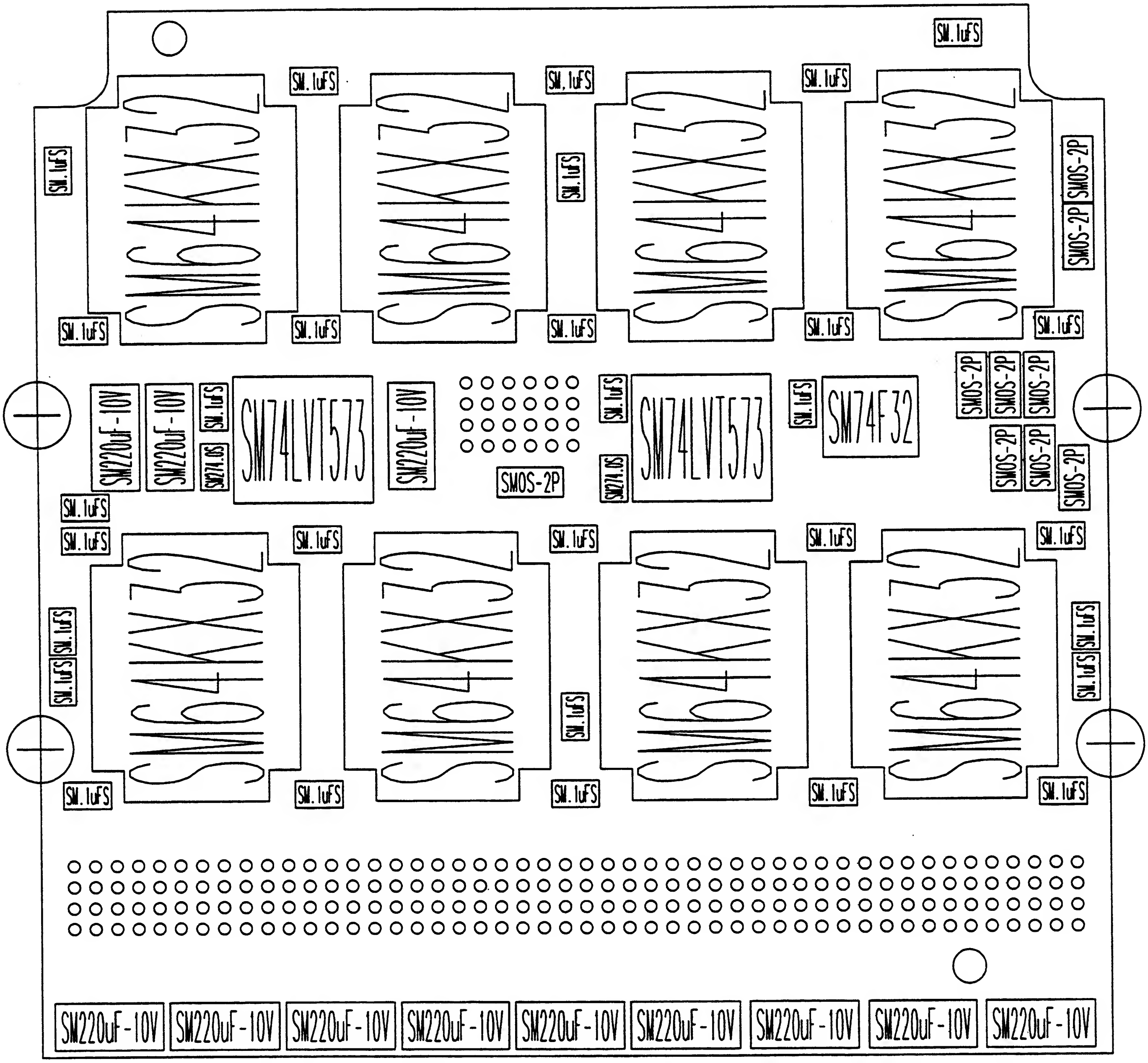
9384MEM-2 Rev B Side 1



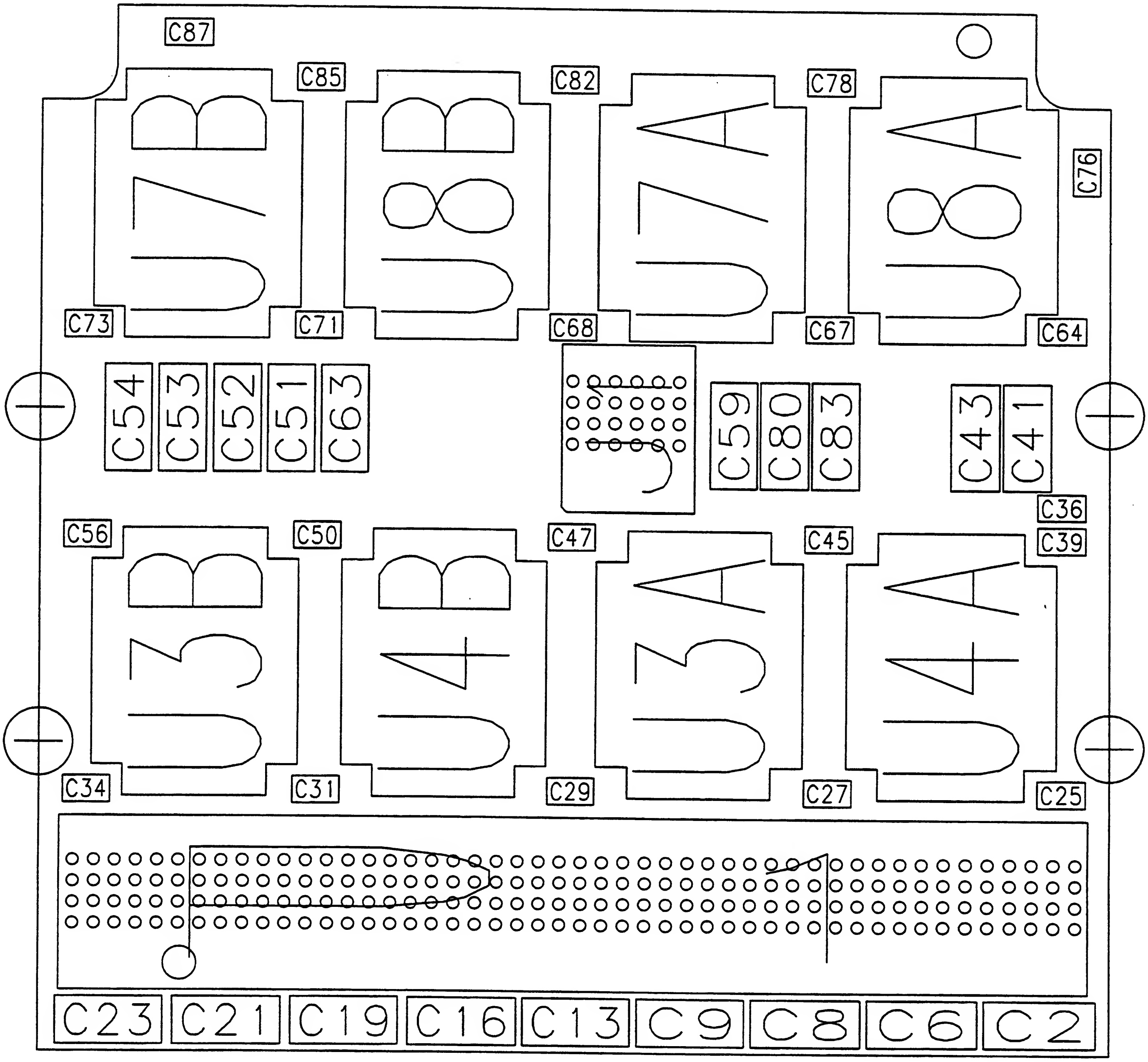
9384MEM-2 Rev B Side 1



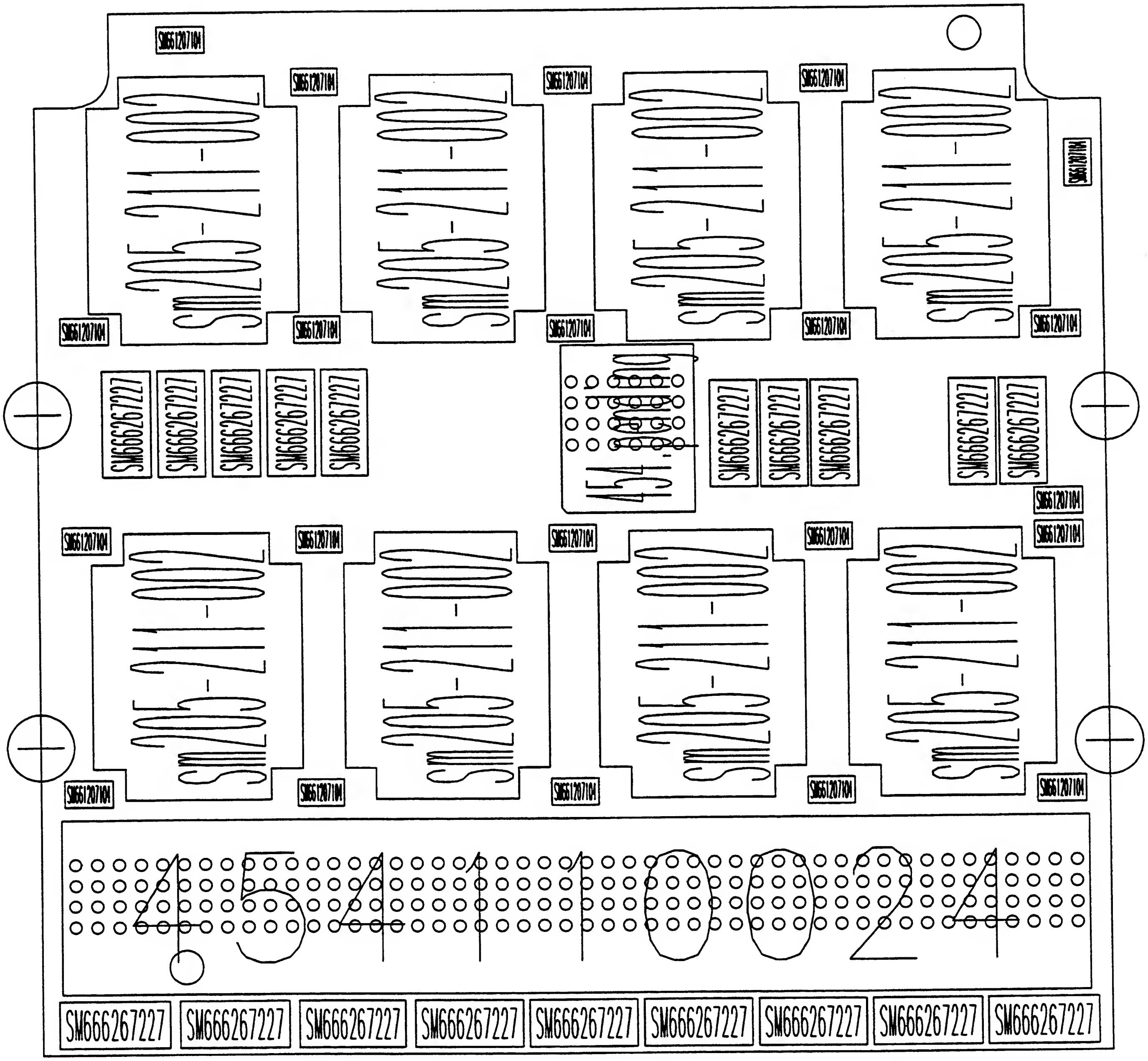
9384MEM-2 Rev B Side 1



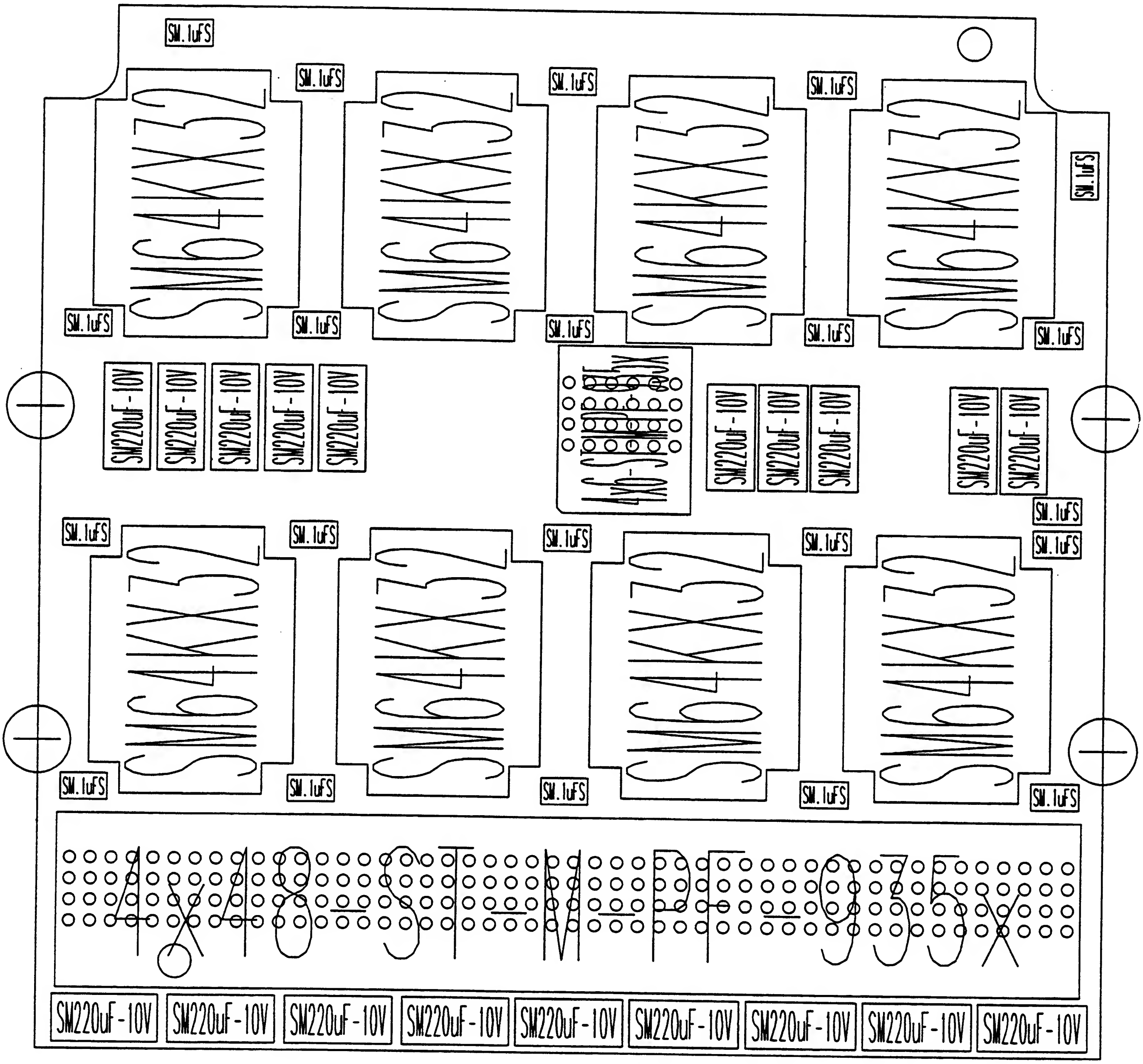
9384MEM-2 Rev B Side 2



9384MEM-2 Rev B Side 2



9384MEM-2 Rev B Side 2

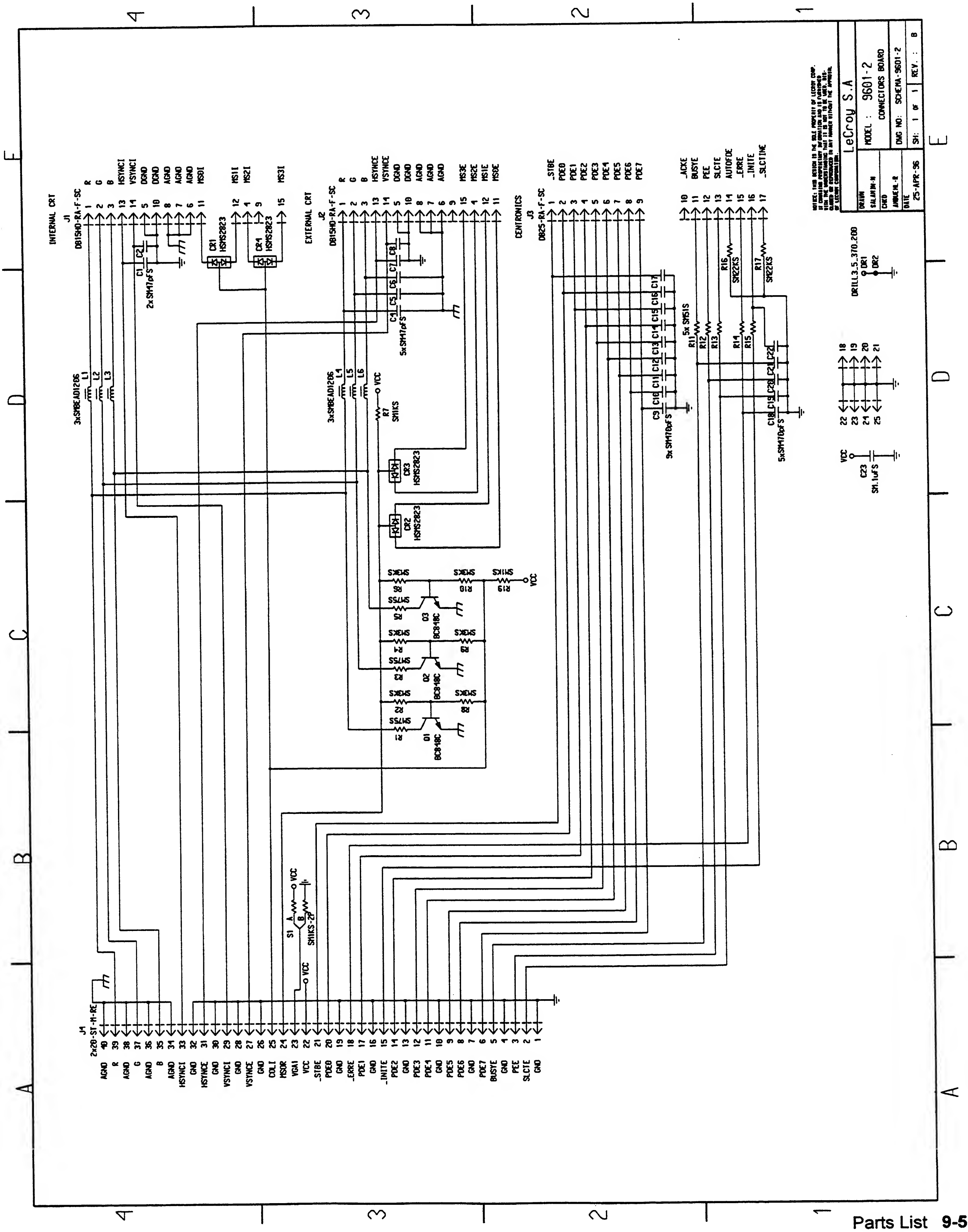


PART: 9384MEM-2 DESC : Acquisition Memory Card with 2 X 2M

Location	Part Number	Description
C1	SM666267227	SM220uF-10V
C2	SM666267227	SM220uF-10V
C3	SM661207104	SM.1uFS
C4	SM661207104	SM.1uFS
C5	SM666267227	SM220uF-10V
C6	SM666267227	SM220uF-10V
C7	SM666267227	SM220uF-10V
C8	SM666267227	SM220uF-10V
C9	SM666267227	SM220uF-10V
C10	SM666267227	SM220uF-10V
C11	SM661207104	SM.1uFS
C12	SM661207104	SM.1uFS
C13	SM666267227	SM220uF-10V
C14	SM666267227	SM220uF-10V
C15	SM661207104	SM.1uFS
C16	SM666267227	SM220uF-10V
C17	SM666267227	SM220uF-10V
C18	SM666267227	SM220uF-10V
C19	SM666267227	SM220uF-10V
C20	SM666267227	SM220uF-10V
C21	SM666267227	SM220uF-10V
C22	SM666267227	SM220uF-10V
C23	SM666267227	SM220uF-10V
C24	SM661207104	SM.1uFS
C25	SM661207104	SM.1uFS
C26	SM661207104	SM.1uFS
C27	SM661207104	SM.1uFS
C28	SM661207104	SM.1uFS
C29	SM661207104	SM.1uFS
C30	SM661207104	SM.1uFS
C31	SM661207104	SM.1uFS
C32	SM661207104	SM.1uFS
C33	SM661207104	SM.1uFS
C34	SM661207104	SM.1uFS
C36	SM661207104	SM.1uFS
C37	SM661207104	SM.1uFS
C38	SM661207104	SM.1uFS
C39	SM661207104	SM.1uFS
C40	SM666267227	SM220uF-10V
C41	SM666267227	SM220uF-10V
C42	SM666267227	SM220uF-10V
C43	SM666267227	SM220uF-10V
C44	SM661207104	SM.1uFS
C45	SM661207104	SM.1uFS
C46	SM661207104	SM.1uFS
C47	SM661207104	SM.1uFS
C49	SM661207104	SM.1uFS
C50	SM661207104	SM.1uFS
C51	SM666267227	SM220uF-10V
C52	SM666267227	SM220uF-10V
C53	SM666267227	SM220uF-10V
C54	SM666267227	SM220uF-10V
C55	SM661207104	SM.1uFS
C56	SM661207104	SM.1uFS
C58	SM661207104	SM.1uFS
C59	SM666267227	SM220uF-10V
C60	SM666267227	SM220uF-10V
C61	SM661207104	SM.1uFS
C62	SM661207104	SM.1uFS
C63	SM666267227	SM220uF-10V
C64	SM661207104	SM.1uFS
C65	SM661207104	SM.1uFS
C66	SM661207104	SM.1uFS
C67	SM661207104	SM.1uFS
C68	SM661207104	SM.1uFS
C69	SM661207104	SM.1uFS
C70	SM661207104	SM.1uFS
C71	SM661207104	SM.1uFS
C72	SM661207104	SM.1uFS
C73	SM661207104	SM.1uFS
C76	SM661207104	SM.1uFS
C77	SM661207104	SM.1uFS
C78	SM661207104	SM.1uFS
C79	SM661207104	SM.1uFS
C80	SM666267227	SM220uF-10V
C81	SM661207104	SM.1uFS
C82	SM661207104	SM.1uFS
C83	SM666267227	SM220uF-10V
C84	SM661207104	SM.1uFS
C85	SM661207104	SM.1uFS
C86	SM661207104	SM.1uFS
C87	SM661207104	SM.1uFS
J1	454110024	4x6-ST-M-PF-935x
P1	454110024	4x6-ST-M-PF-935x
R1	SM654101000	SM0S-2P
R2	SM654101000	SM0S-2P
R3	SM654101000	SM0S-2P
R4	SM654101000	SM0S-2P

PART: 9384MEM-2 **DESC : Acquisiton Memory Card with 2 X 2M**

Location	Part Number	Description
R5	SM654101000	SM0S-2P
R6	SM654101000	SM0S-2P
R7	SM654101000	SM0S-2P
R8	SM654101000	SM0S-2P
R9	SM654101000	SM0S-2P
R10	SM653101339	SM274.0S
R11	SM653101339	SM274.0S
U18	SM200470573	SM74LVT573
U19	SM200470573	SM74LVT573
U1A	sm205-211-002	SM64KX32
U1B	sm205-211-002	SM64KX32
U21	SM200170032	SM74F32
U2A	sm205-211-002	SM64KX32
U2B	sm205-211-002	SM64KX32
U3A	sm205-211-002	SM64KX32
U3B	sm205-211-002	SM64KX32
U4A	sm205-211-002	SM64KX32
U4B	sm205-211-002	SM64KX32
U5A	sm205-211-002	SM64KX32
U5B	sm205-211-002	SM64KX32
U6A	sm205-211-002	SM64KX32
U6B	sm205-211-002	SM64KX32
U7A	sm205-211-002	SM64KX32
U7B	sm205-211-002	SM64KX32
U8A	sm205-211-002	SM64KX32
U8B	sm205-211-002	SM64KX32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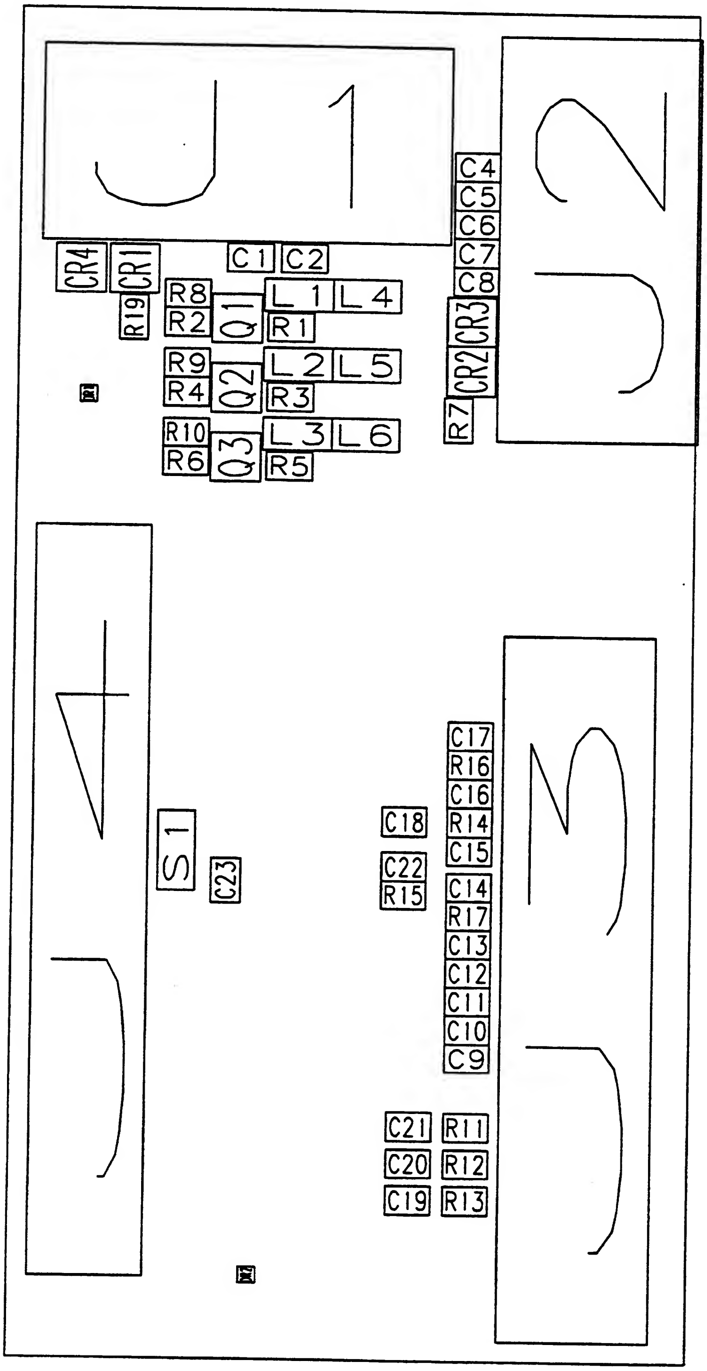
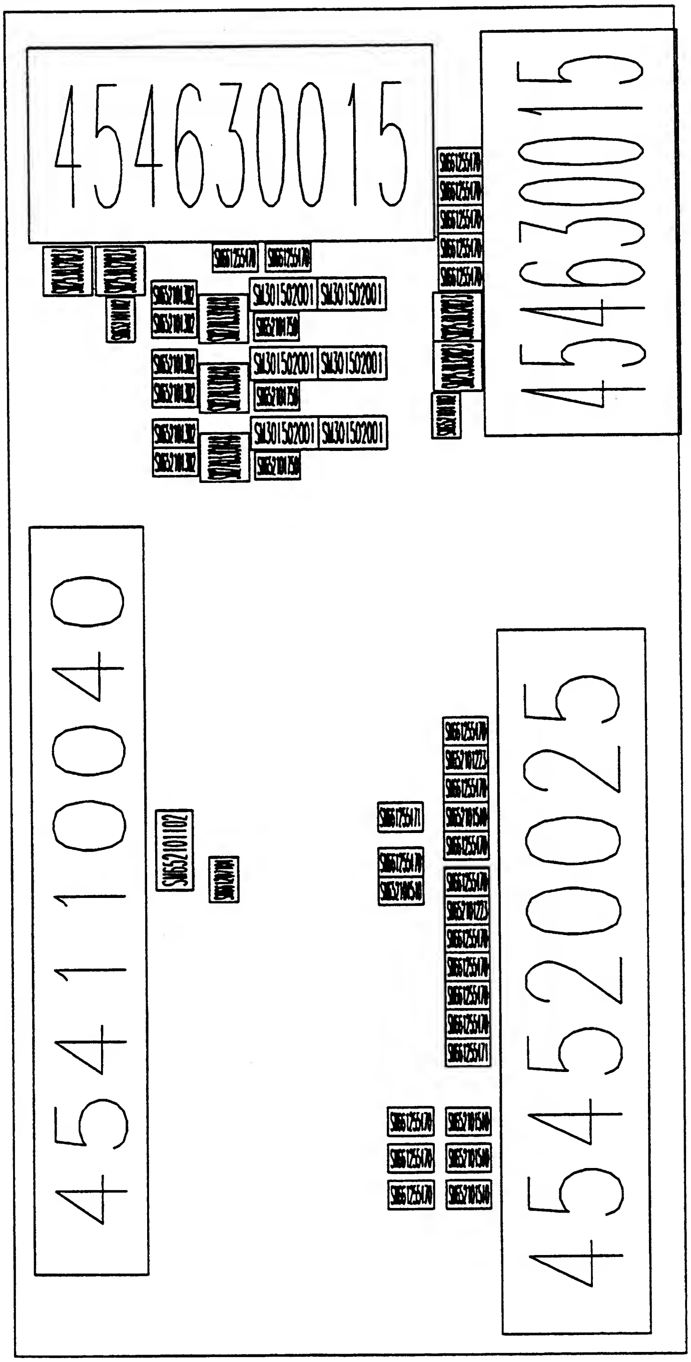
LeCroy S.A
MODEL : 9601-2
CONNECTORS BOARD
DRAWN SALAMIN-N
CHKD ANDUEML-R
DATE 25-APR-96
DWG NO: SCHEMA-9601-2
SH: 1 OF 1
REV. : B
INTERNAL CRT
J1
DB15HD-RA-F-SC
R
G
B
HSYNCI
VSYNCI
DGND
AGND
MSOI
MS1I
MS2I
MS3I
EXTERNAL CRT
J2
DB15HD-RA-F-SC
HSYNCE
VSYNCE
MS3E
MS2E
MS1E
MS0E
CENTRONICS
J3
DB25-RA-F-SC
_STBE
PDE0
PDE1
PDE2
PDE3
PDE4
PDE5
PDE6
PDE7
_ACKE
BUSYE
PEE
SLCTE
AUTOFDE
_ERRE
_INITE
_SLCTINE
C1 C2
2xSM47pFS
CR1 HSMS2823
CR4 HSMS2823
CR3 HSMS2823
CR2 HSMS2823
3xSMBEAD1206
L1 L2 L3
L4 L5 L6
C4 C5 C6 C7 C8
5xSM47pFS
R7 SM1KS
VCC
C9 C10 C11 C12 C13 C14 C15 C16 C17
9x SM470pFS
R11 R12 R13 R14 R15
5x SM51S
R16 SM22KS
R17 SM22KS
C18 C19 C20 C21 C22
5xSM470pFS
DRILL3_5_370_200
DR1
DR2
C23 SM.1uFS
Q1 BC848C
Q2 BC848C
Q3 BC848C
R1 R3 R5 SM75S
R2 R4 R6 SM3K3S
R8 R9 R10 SM3K3S
R19 SM1KS
S1 A B
SM1KS-2P
J4
2x20-ST-M-RE
AGND
R
AGND
G
AGND
B
AGND
HSYNCI
GND
HSYNCE
GND
VSYNCI
GND
VSYNCE
GND
COLI
MSOR
VGAI
VCC
_STBE
PDE0
GND
_ERRE
PDE1
GND
_INITE
PDE2
GND
PDE3
PDE4
GND
PDE5
PDE6
GND
PDE7
BUSYE
GND
PEE
SLCTE
GND
A
B
C
D
E
1
2
3
4

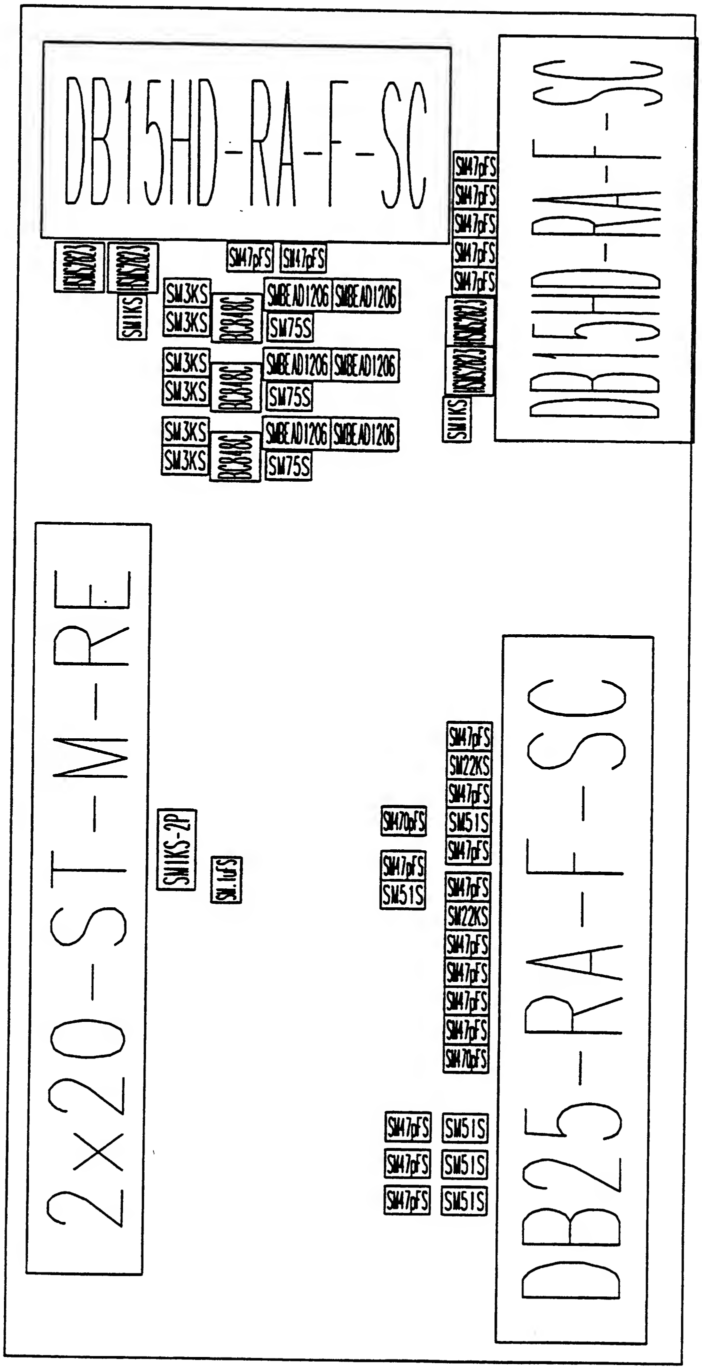
F9601-2 Rev B


J1
J2
J3
J4
C4
C5
C6
C7
C8
CR4
CR1
C1
C2
R8
R2
Q1
L1
L4
R1
R19
CR3
CR2
R9
R4
Q2
L2
L5
R3
R7
R10
R6
Q3
L3
L6
R5
C17
R16
C16
C18
R14
C15
S1
C22
R15
C14
C23
R17
C13
C12
C11
C10
C9
C21
R11
C20
R12
C19
R13

F9601-2 Rev B

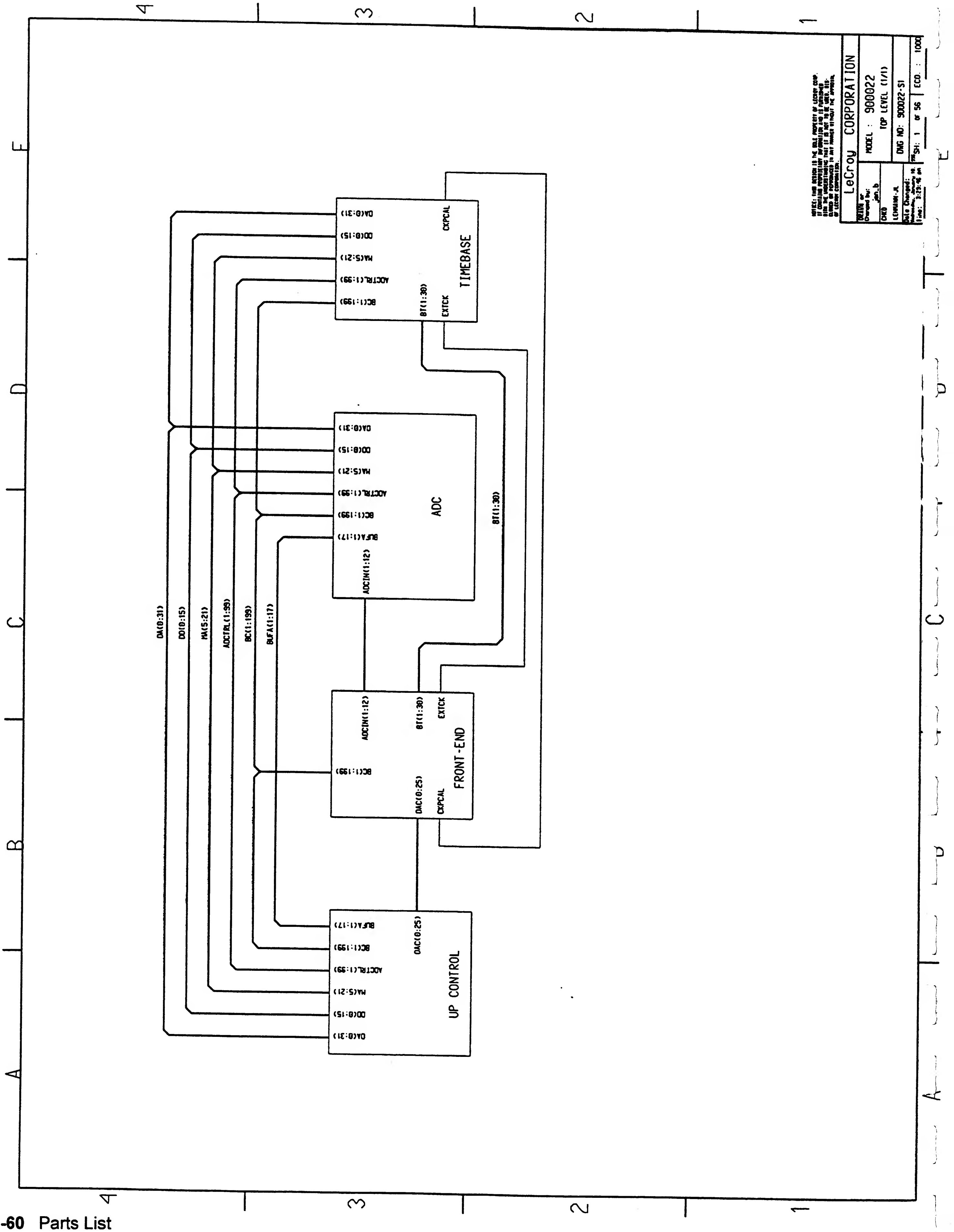

45463 0015
45463 0015
SM301502001
SM301502001
SM301502001
SM301502001
SM301502001
SM301502001
45411 0040
SM652101102
45452 0025

F9601-2 Rev B


DB15HD-RA-F-SC
SM47pFS
SM47pFS
SM3KS
SM3KS
BC848C
SMBEAD1206
SMBEAD1206
SM75S
SM1KS
SM3KS
SM3KS
BC848C
SMBEAD1206
SMBEAD1206
SM75S
SM3KS
SM3KS
BC848C
SMBEAD1206
SMBEAD1206
SM75S
SM47pFS
SM47pFS
SM47pFS
SM47pFS
SM47pFS
SM1KS
DB15HD-RA-F-SC
2x20-ST-M-RE
SM1KS-2P
SM.1uFS
SM470pFS
SM47pFS
SM51S
SM47pFS
SM22KS
SM47pFS
SM51S
SM47pFS
SM47pFS
SM22KS
SM47pFS
SM47pFS
SM47pFS
SM47pFS
SM470pFS
SM47pFS
SM51S
SM47pFS
SM51S
SM47pFS
SM51S
DB25-RA-F-SC

PART: F9601-2 **DESC : Centronics & VGA Interface**

Location	Part Number	Description	Location	Part Number	Description
C1	SM661255470	SM47pFS	J4	454110040	2x20-ST-M-RE
C2	SM661255470	SM47pFS	L1	SM301502001	SMBEAD1206
C4	SM661255470	SM47pFS	L2	SM301502001	SMBEAD1206
C5	SM661255470	SM47pFS	L3	SM301502001	SMBEAD1206
C6	SM661255470	SM47pFS	L4	SM301502001	SMBEAD1206
C7	SM661255470	SM47pFS	L5	SM301502001	SMBEAD1206
C8	SM661255470	SM47pFS	L6	SM301502001	SMBEAD1206
C9	SM661255471	SM470pFS	Q1	SM270330848	BC848C
C10	SM661255470	SM47pFS	Q2	SM270330848	BC848C
C11	SM661255470	SM47pFS	Q3	SM270330848	BC848C
C12	SM661255470	SM47pFS	R1	SM652101750	SM75S
C13	SM661255470	SM47pFS	R2	SM652101302	SM3KS
C14	SM661255470	SM47pFS	R3	SM652101750	SM75S
C15	SM661255470	SM47pFS	R4	SM652101302	SM3KS
C16	SM661255470	SM47pFS	R5	SM652101750	SM75S
C17	SM661255470	SM47pFS	R6	SM652101302	SM3KS
C18	SM661255471	SM470pFS	R7	SM652101102	SM1KS
C19	SM661255470	SM47pFS	R8	SM652101302	SM3KS
C20	SM661255470	SM47pFS	R9	SM652101302	SM3KS
C21	SM661255470	SM47pFS	R10	SM652101302	SM3KS
C22	SM661255470	SM47pFS	R11	SM652101510	SM51S
C23	SM661207104	SM.1uFS	R12	SM652101510	SM51S
CR1	SM253032823	HSMS2823	R13	SM652101510	SM51S
CR2	SM253032823	HSMS2823	R14	SM652101510	SM51S
CR3	SM253032823	HSMS2823	R15	SM652101510	SM51S
CR4	SM253032823	HSMS2823	R16	SM652101223	SM22KS
J1	454630015	DB15HD-	R17	SM652101223	SM22KS
J2	454630015	DB15HD	R19	SM652101102	SM1KS
J3	454520025	DB25-RA	S1	SM652101102	SM1KS-2P


TIMEBASE
DA(0:31)
DD(0:15)
MA(5:21)
ADCTRL(1:99)
BC(1:199)
BT(1:30)
EXTCK
CKPCAL
ADC
BUFA(1:17)
ADCIN(1:12)
FRONT-END
DAC(0:25)
UP CONTROL
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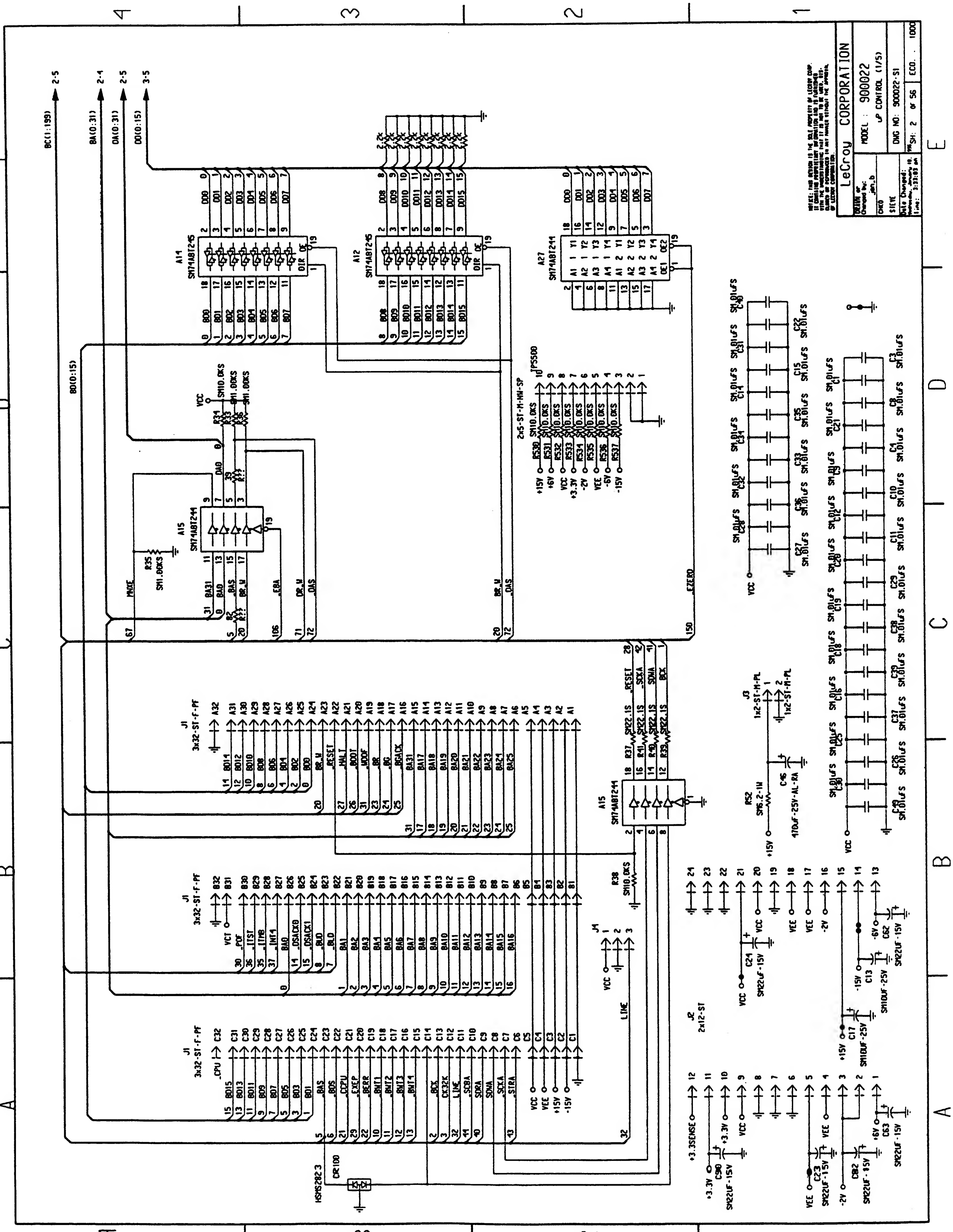
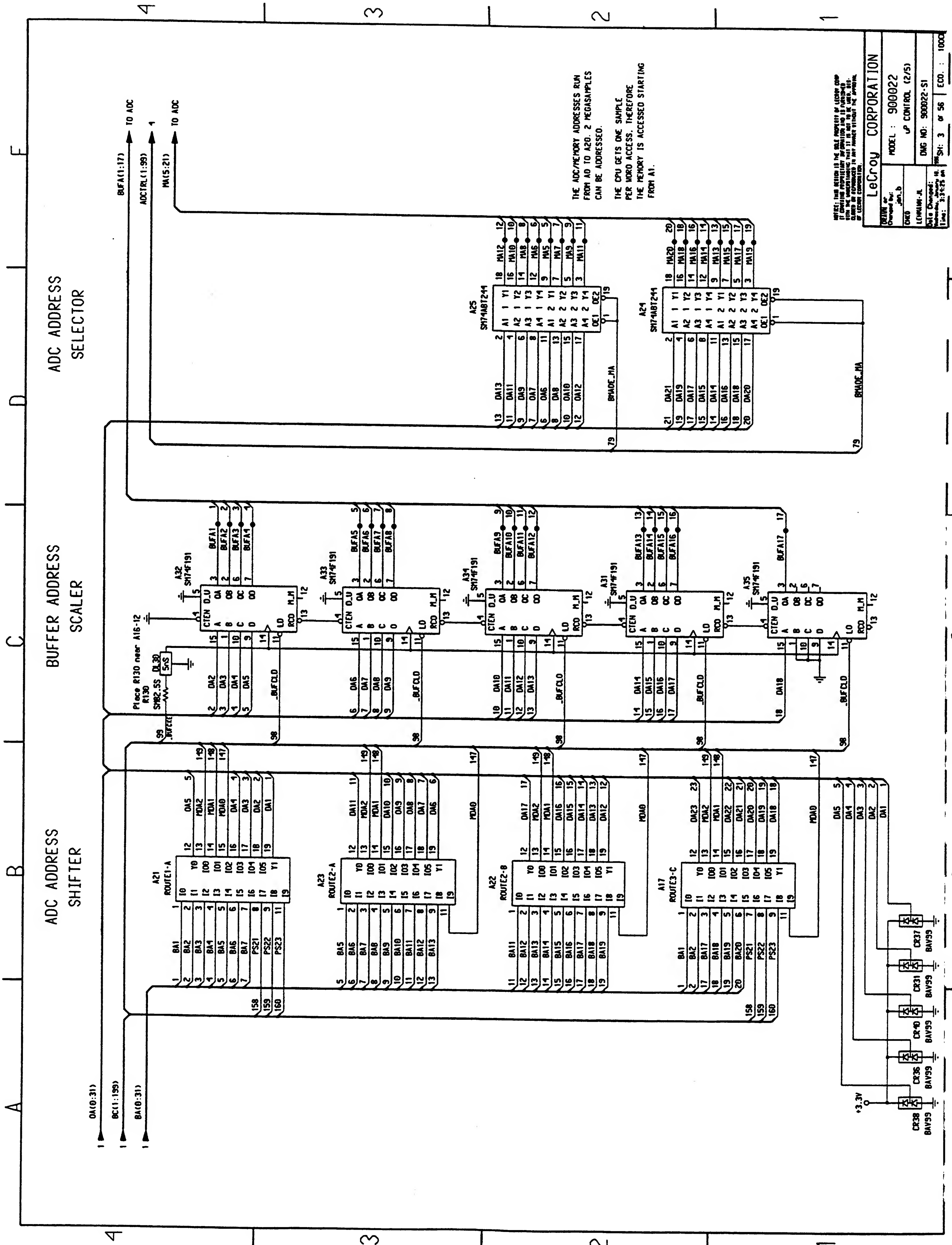
LeCroy CORPORATION
DRAWN or Changed by: jan_b
CHKD
LEHMANN-JL
Date Changed:
Time: 3:29:46 pm
MODEL : 900022
TOP LEVEL (1/1)
DWG NO: 900022-S1
SH: 1 of 56
ECO. : 1000

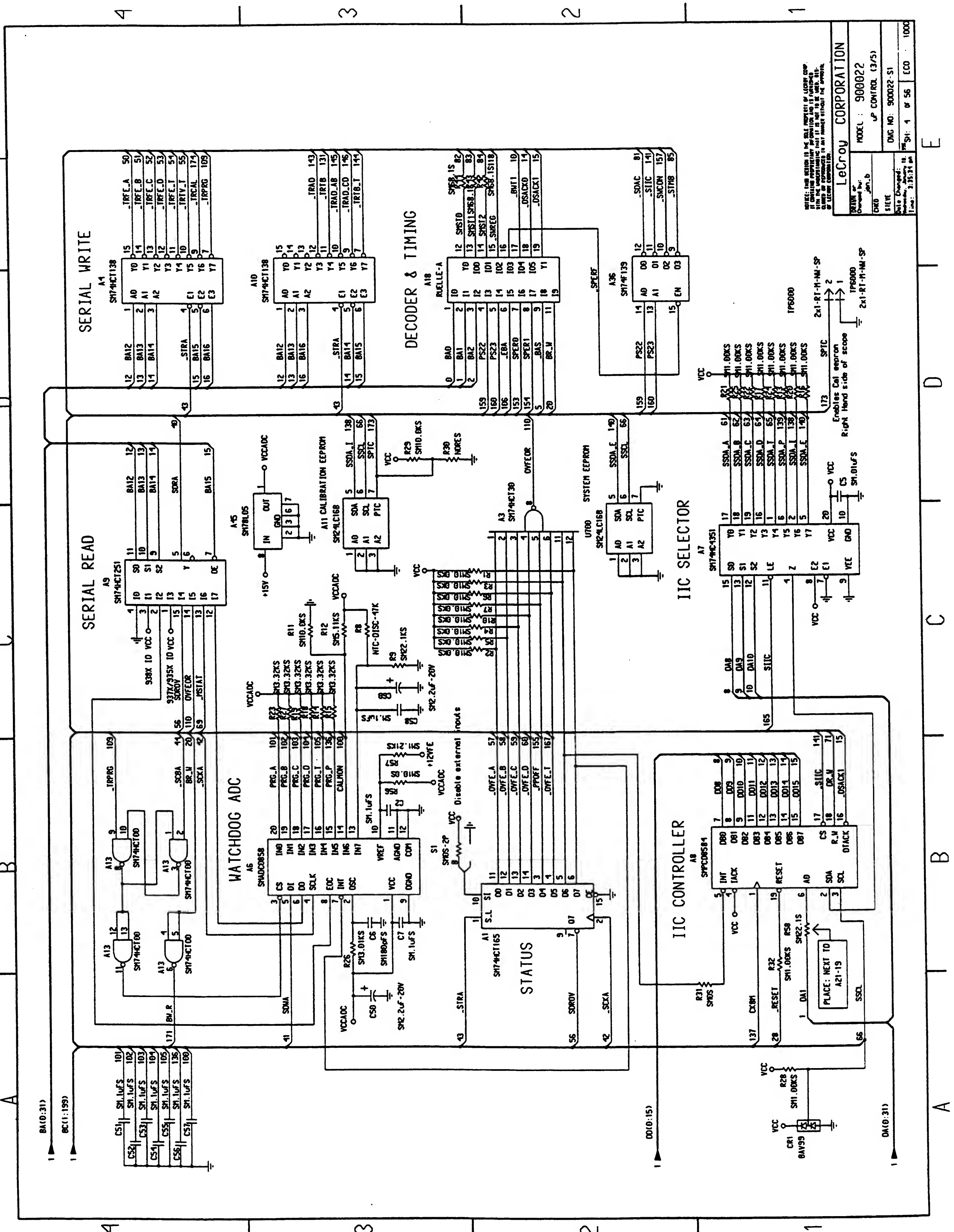

LeCroy CORPORATION
MODEL : 900022
µP CONTROL (1/5)
DWG NO: 900022-S1
SH: 2 OF 56
ECO. 1000
SM74ABT245
SM74ABT244
J1 3x32-ST-F-PF
J2 2x12-ST
J3 1x2-ST-M-PL
BC(1:199)
BA(0:31)
DA(0:31)
DD(0:15)
BD(0:15)
HSMS2823
CR100

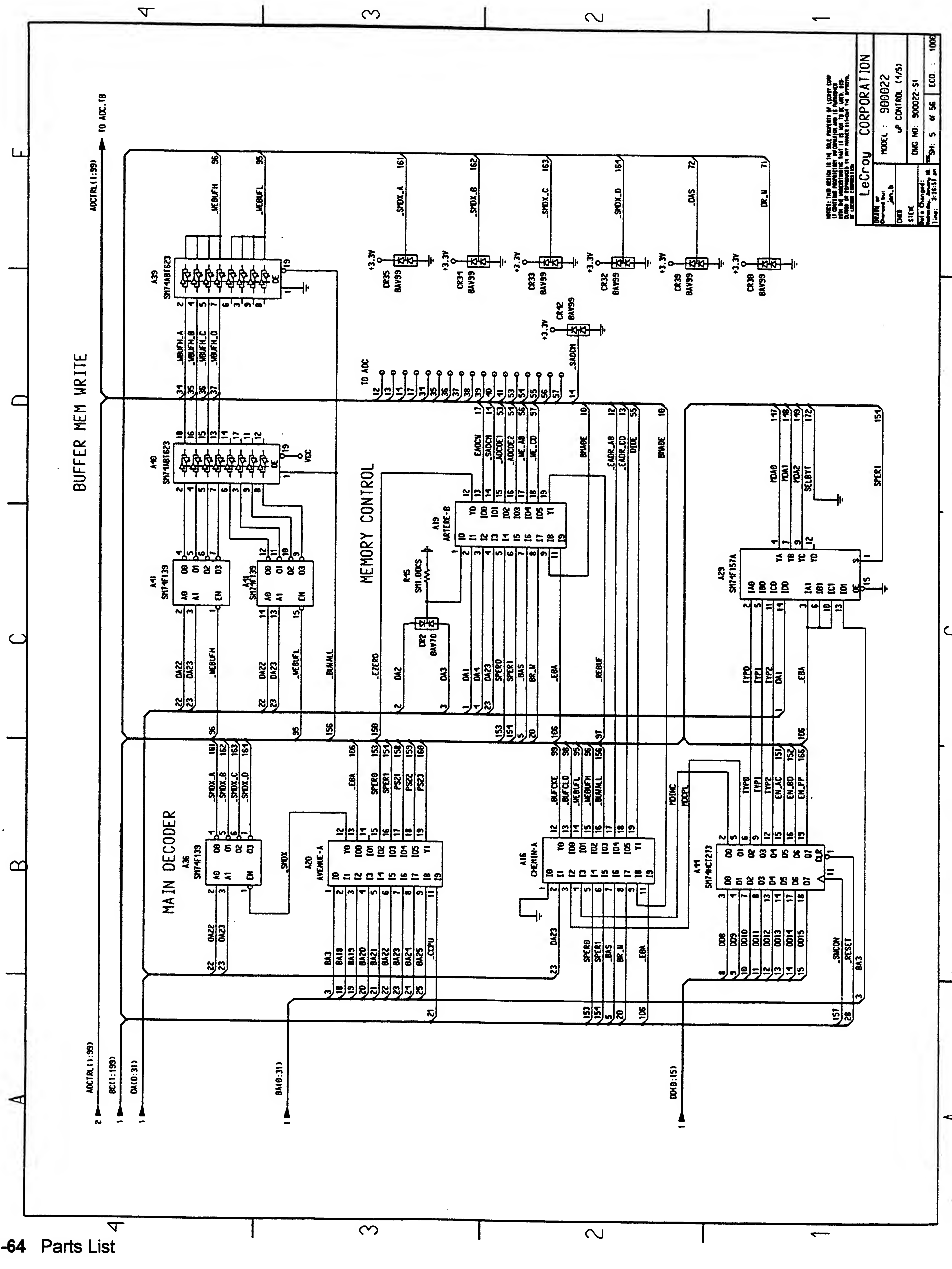


THE ADC/MEMORY ADDRESSES RUN FROM A0 TO A20. 2 MEGASAMPLES CAN BE ADDRESSED.

THE CPU GETS ONE SAMPLE PER WORD ACCESS. THEREFORE THE MEMORY IS ACCESSED STARTING FROM A1.

LeCroy CORPORATION
MODEL : 900022
uP CONTROL (2/5)
DWG NO: 900022-S1
SH: 3 OF 56
ECO : 1000


LeCroy CORPORATION
MODEL : 900022
µP CONTROL (3/5)
DWG NO: 900022-S1
SH: 4 OF 56
ECO 1000
SERIAL WRITE
A4 SM74HCT138
A10 SM74HCT138
DECODER & TIMING
A18 RUELLE-A
A36 SM74F139
SERIAL READ
A9 SM74HCT251
A45 SM78L05
A11 CALIBRATION EEPROM SM24LC16B
A3 SM74HCT30
SYSTEM EEPROM U700 SM24LC16B
IIC SELECTOR
A7 SM74HC4351
TP6000 2x1-R1-M-NW-SP
Enables Cal eeprom
Right Hand side of scope
WATCHDOG ADC
A6 SMADC0858
A13 SM74HCT00
S1 SMDS-2P
Disable external routs
STATUS
A1 SM74HCT165
IIC CONTROLLER
A8 SMPCD8584
PLACE: NEXT TO A21-19
CR1 BAV99
BA(0:31)
BC(1:199)
DD(0:15)
DA(0:31)
A
B
C
D
E
1
2
3
4


BUFFER MEM WRITE
MEMORY CONTROL
MAIN DECODER
TO ADC.T8
TO ADC
ADCTRL(1:99)
BC(1:199)
DA(0:31)
BA(0:31)
DD(0:15)
A39 SM74ABT623
A40 SM74ABT623
A41 SM74F139
A36 SM74F139
A19 ARTERE-B
A20 AVENUE-A
A16 CHEMIN-A
A29 SM74F157A
A44 SM74HCT273
CR35 BAV99
CR34 BAV99
CR33 BAV99
CR32 BAV99
CR39 BAV99
CR30 BAV99
CR42 BAV99
CR2 BAV70
R45 SM1.00KS
+3.3V
VCC
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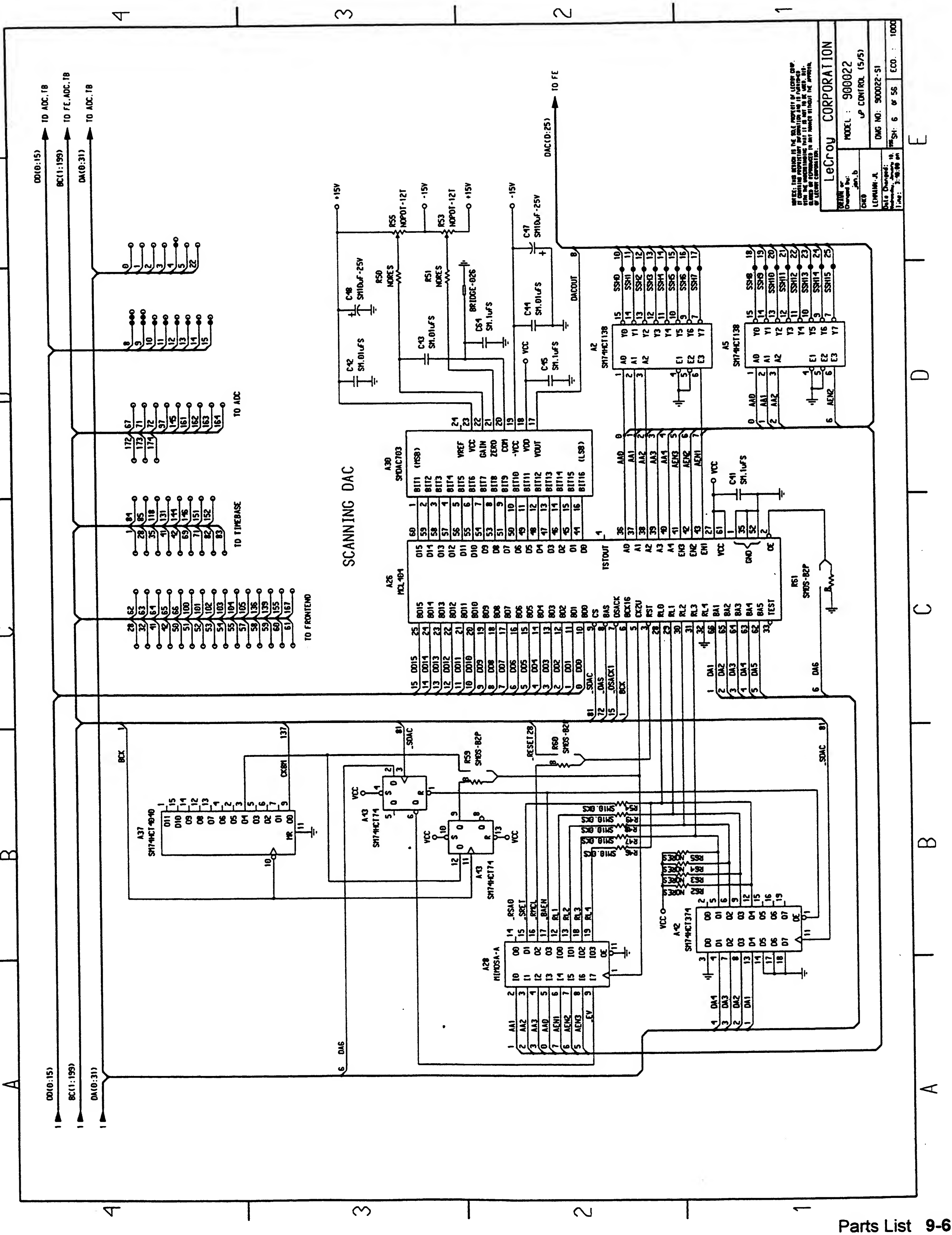
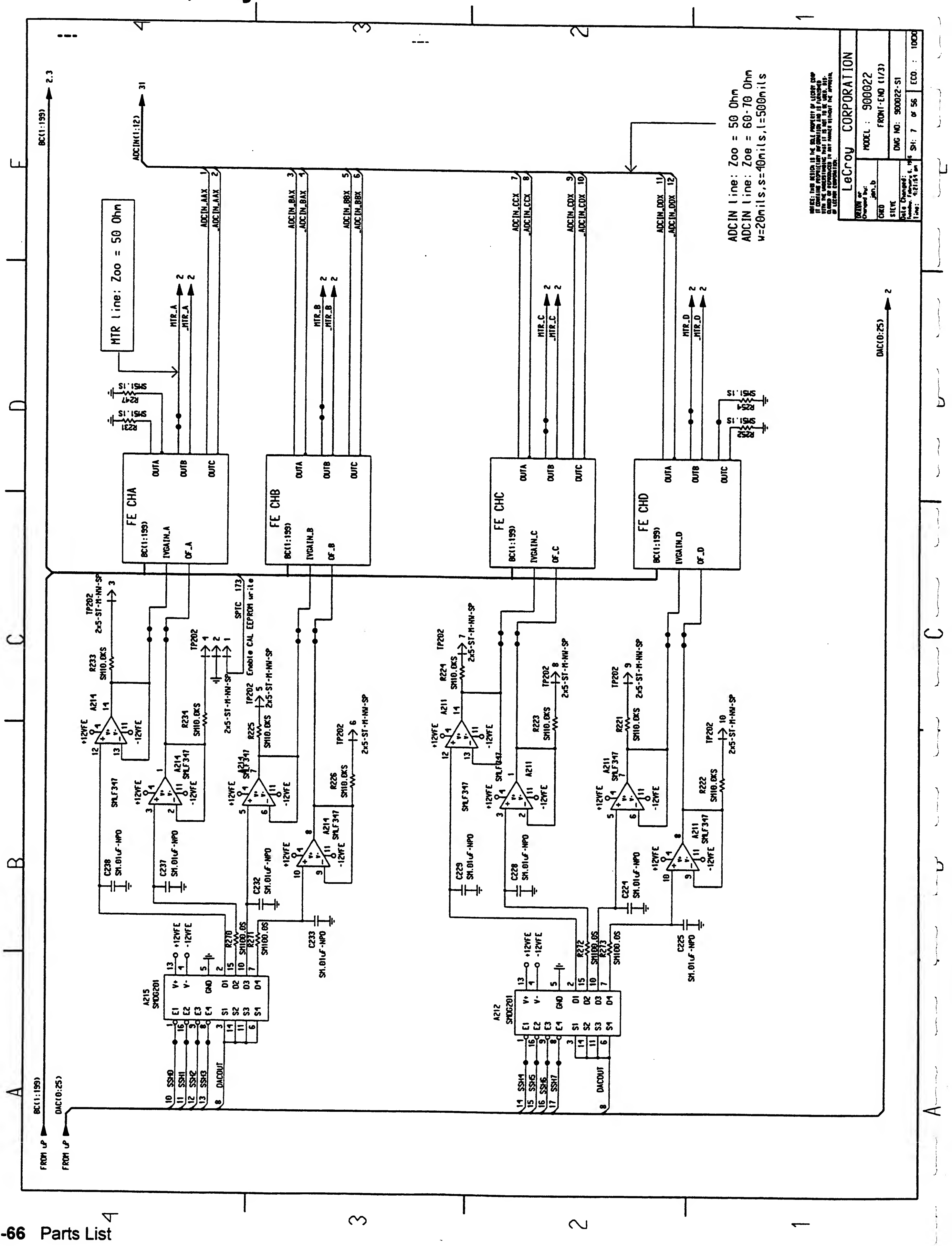
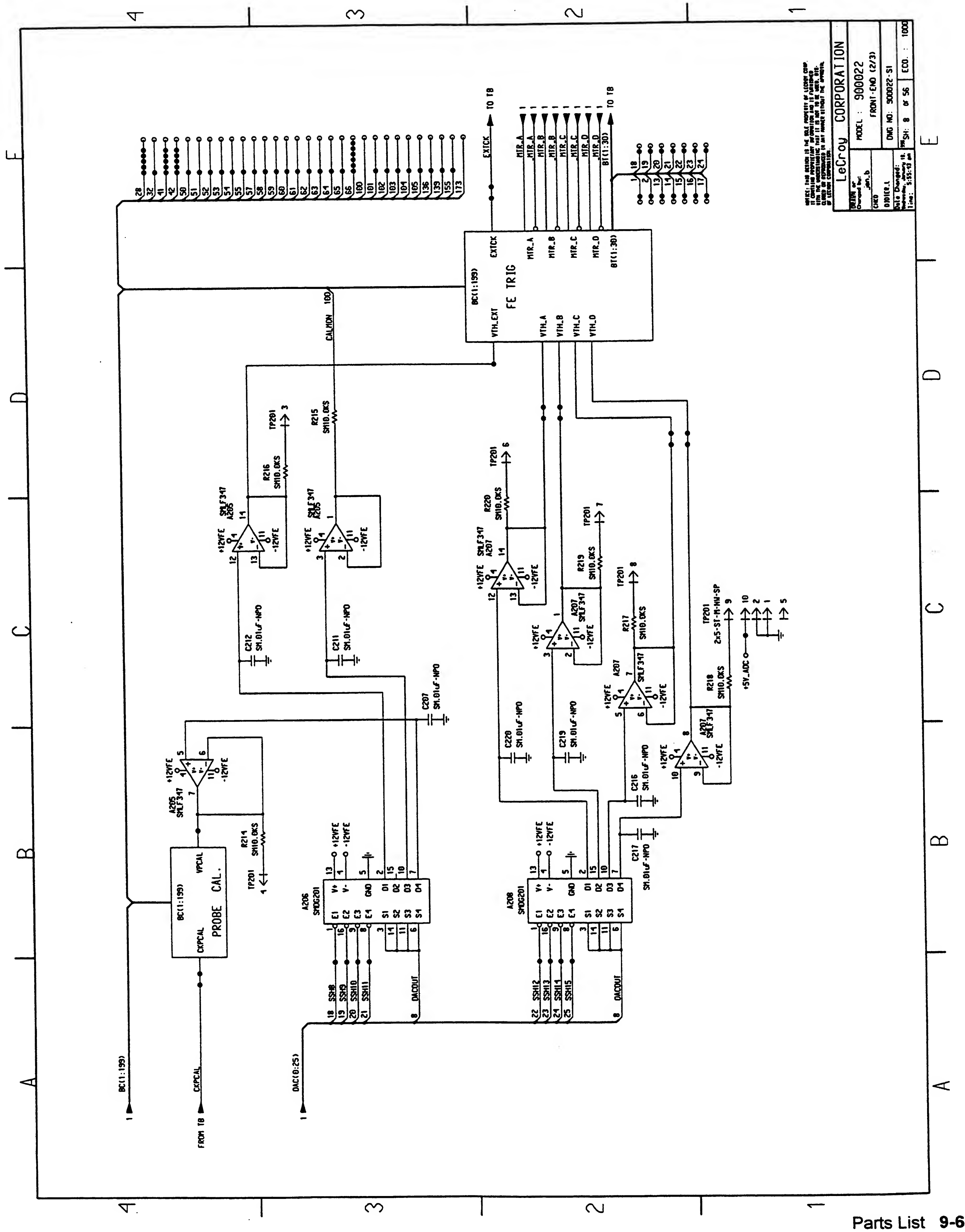
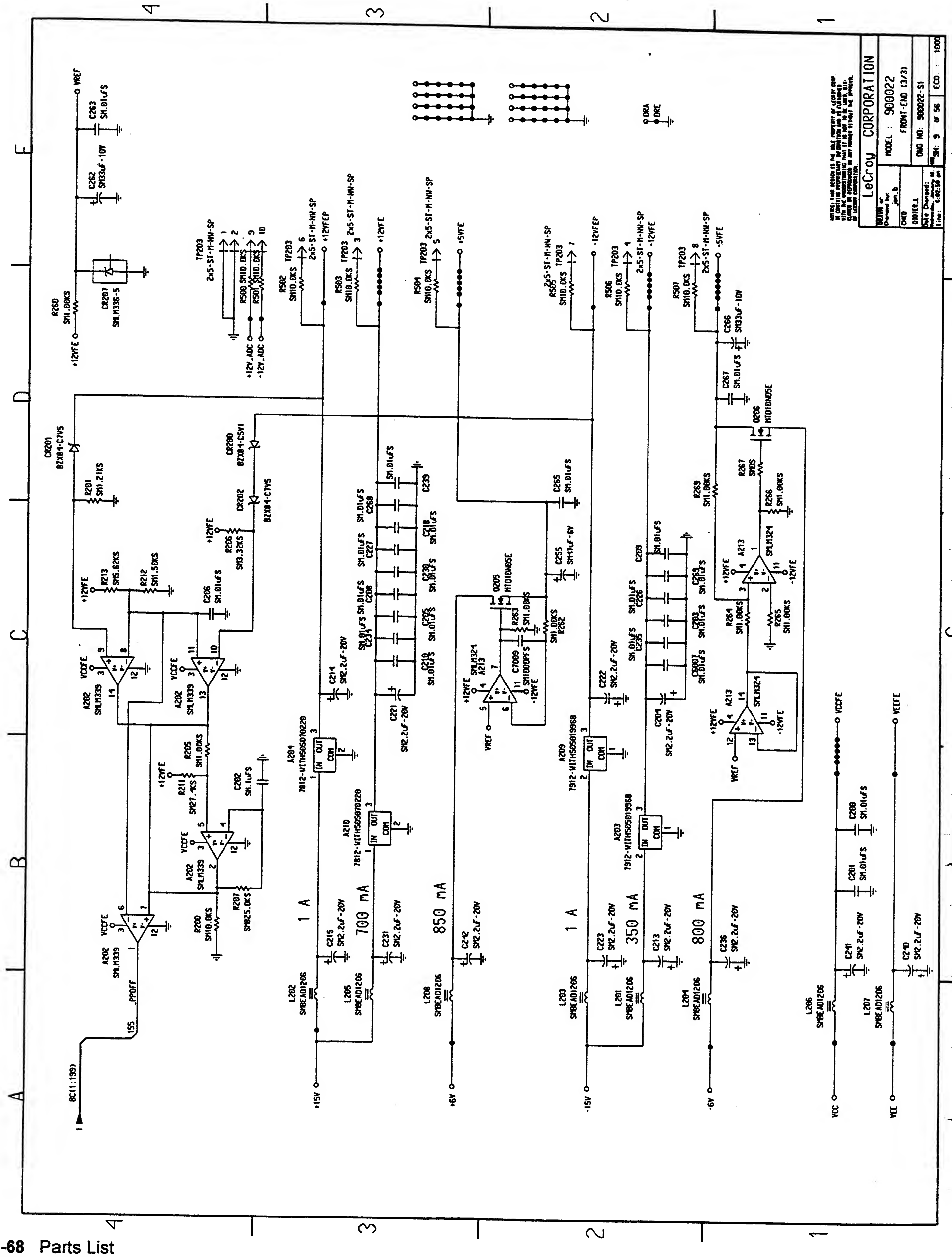
LeCroy CORPORATION
DRAWN or Changed by: jan.b
MODEL : 900022
µP CONTROL (4/5)
CHKD
STEVE
DWG NO: 900022-S1
Date Changed: Time: 3:36:57 pm
SH: 5 of 56
ECO. : 1000
1
2
3
4
A
B
C
D
E
F


SCANNING DAC
A26 MCL404
A30 SPDAC703
A2 SM74HC138
A5 SM74HC138
A37 SM74HCT4040
A43 SM74HCT74
A28 MIMOSA-A
A42 SM74HCT374
TO ADC.TB
TO FE.ADC.TB
TO ADC
TO TIMEBASE
TO FRONTEND
TO FE
DD(0:15)
BC(1:199)
DA(0:31)
DAC(0:25)
+15V
-15V
VCC
LeCroy CORPORATION
MODEL : 900022
uP CONTROL (5/5)
DWG NO: 900022-S1
SH: 6 of 56
ECO : 1000


LeCroy CORPORATION
MODEL : 900022
FRONT-END (1/3)
DWG NO: 900022-S1
SH: 7 of 56
ECO. : 1000
DRAWN or Changed by: jon_b
CHKD
STEVE
Date Changed:
Time:
ADCIN line: Zoo = 50 Ohm
ADCIN line: Zoe = 60-70 Ohm
W=20mils,s=40mils,l=500mils
MTR line: Zoo = 50 Ohm
ADCIN(1:12)
BC(1:199)
DAC(0:25)
FE CHA
FE CHB
FE CHC
FE CHD
OUTA
OUTB
OUTC
IVGAIN_A
IVGAIN_B
IVGAIN_C
IVGAIN_D
OF_A
OF_B
OF_C
OF_D
MTR_A
_MTR_A
MTR_B
_MTR_B
MTR_C
_MTR_C
MTR_D
_MTR_D
ADCIN_AAX
_ADCIN_AAX
ADCIN_BAX
_ADCIN_BAX
ADCIN_BBX
_ADCIN_BBX
ADCIN_CCX
_ADCIN_CCX
ADCIN_CDX
_ADCIN_CDX
ADCIN_DDX
_ADCIN_DDX
R231
R247
R252
R254
SM51.1S
TP202
2x5-ST-M-NN-SP
SPTC 173
Enable CAL EEPROM write
A214
A211
SMLF347
+12VFE
-12VFE
R233
R234
R225
R226
R224
R223
R221
R222
SM10.0KS
C238
C237
C232
C233
C229
C228
C224
C225
SM.01uF-NPO
R270
R271
R272
R273
SM100.0S
A215
A212
SMDG201
SSH0
SSH1
SSH2
SSH3
SSH4
SSH5
SSH6
SSH7
DACOUT
FROM uP


LeCroy CORPORATION
MODEL : 900022
FRONT-END (2/3)
DWG NO: 900022-S1
SH: 8 of 56
ECO. : 1000
DRAWN or Changed by: jan_b
CHKD
DIDIER.L
Date Changed:
Time: 5:55:43 am
FE TRIG
BC(1:199)
EXTCK
MTR_A
MTR_B
MTR_C
MTR_D
BT(1:30)
VTH_EXT
VTH_A
VTH_B
VTH_C
VTH_D
TO TB
CALMON 180
PROBE CAL.
CKPCAL
VPCAL
FROM TB
DAC(0:25)
DACOUT
A205 SMLF347
A207 SMLF347
A206 SMDG201
A208 SMDG201
+12VFE
-12VFE
TP201
R214 SM10.0KS
R215 SM10.0KS
R216 SM10.0KS
R217 SM10.0KS
R218 SM10.0KS
R219 SM10.0KS
R220 SM10.0KS
C207 SM.01uF-NPO
C211 SM.01uF-NPO
C212 SM.01uF-NPO
C216 SM.01uF-NPO
C217 SM.01uF-NPO
C219 SM.01uF-NPO
C220 SM.01uF-NPO
SSH8
SSH9
SSH10
SSH11
SSH12
SSH13
SSH14
SSH15
TP201 2x5-ST-M-HW-SP
+5V_ADC
E1 E2 E3 E4 S1 S2 S3 S4 V+ V- GND D1 D2 D3 D4
A
B
C
D
E
F
1
2
3
4


LeCroy CORPORATION
MODEL : 900022
FRONT-END (3/3)
DWG NO: 900022-S1
SH: 9 of 56
ECO. : 1000
DRAWN or Changed by: jon_b
CHKD
OIDIER_L
Date Changed:
Time: 6:02:58 pm
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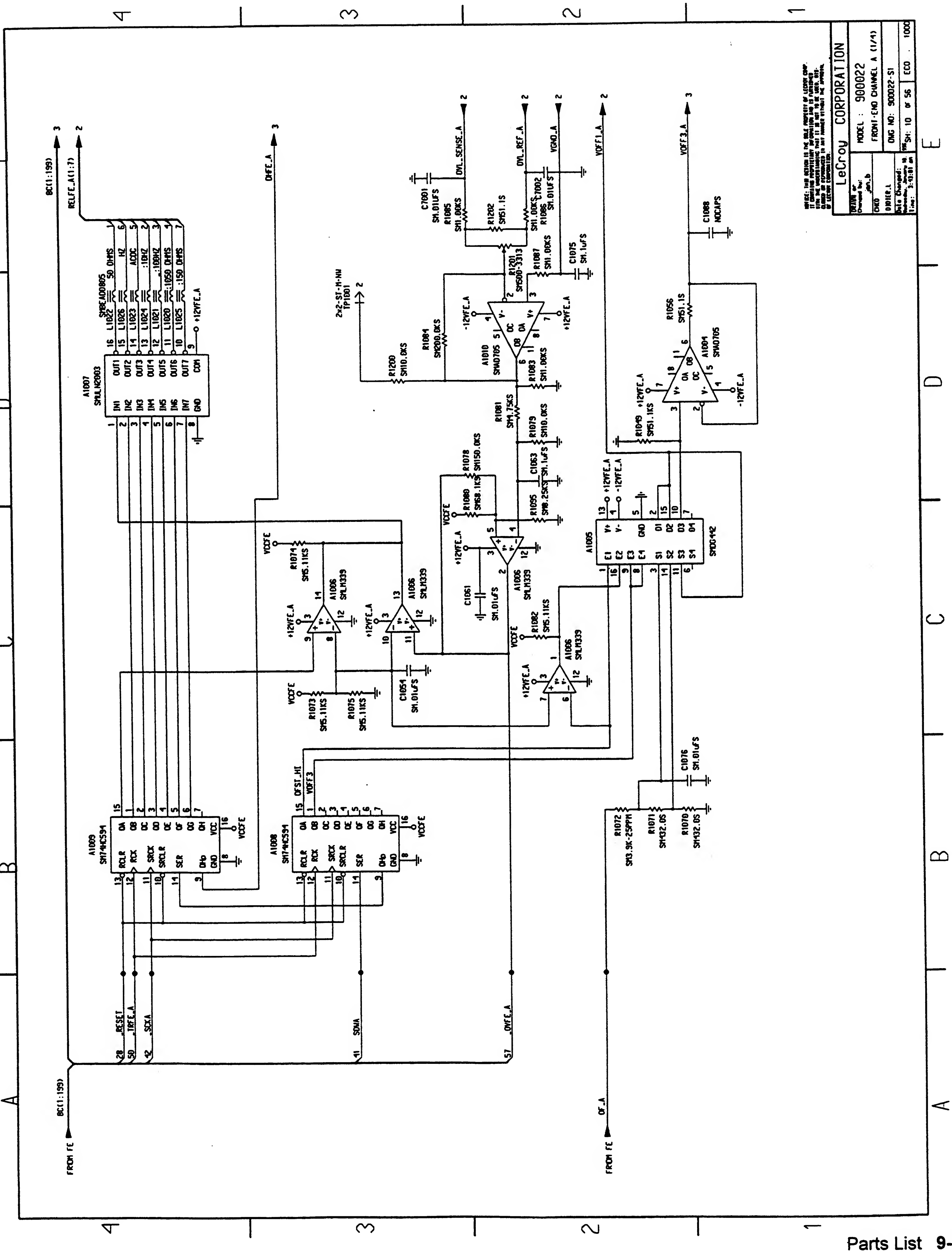
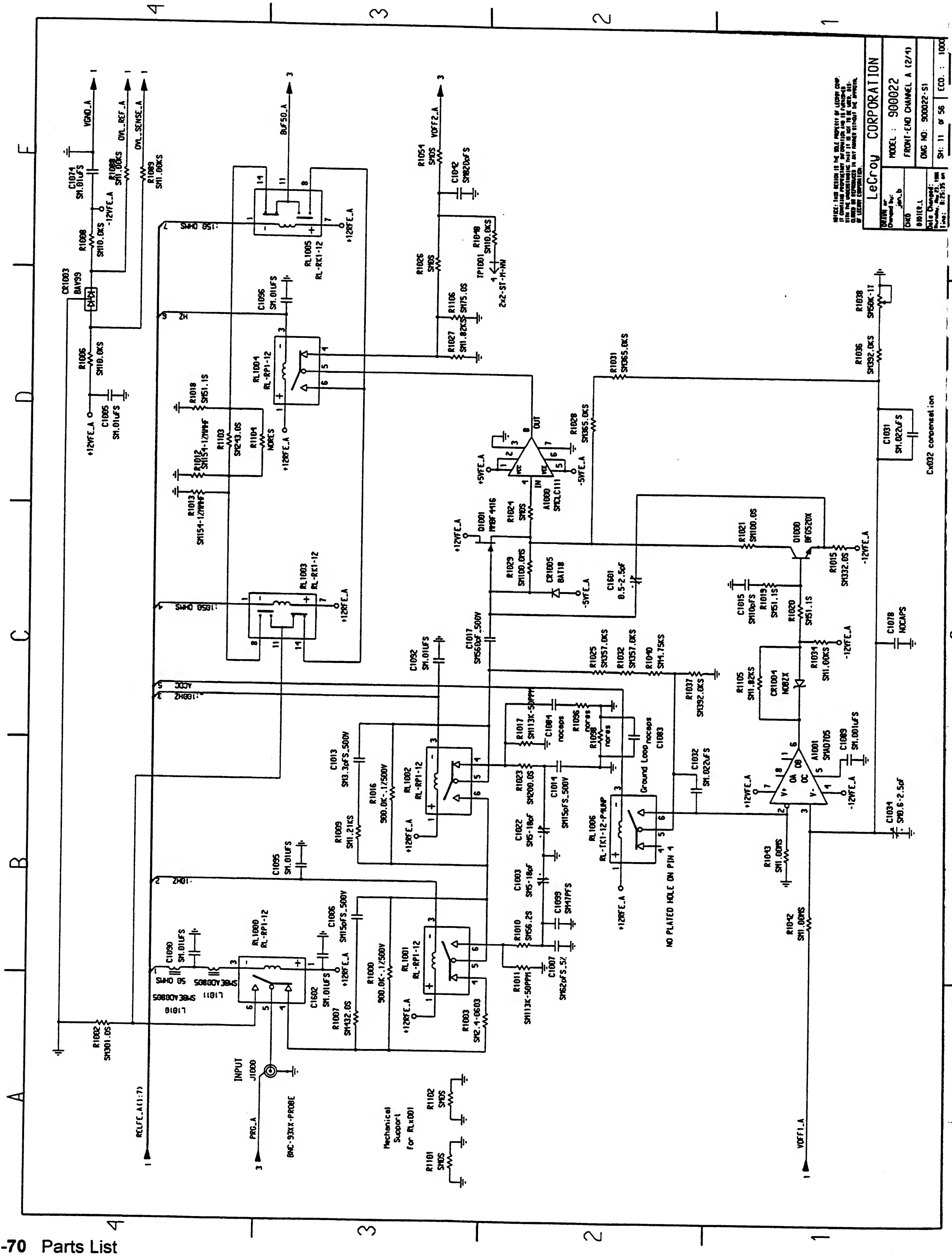
A
B
C
D
E
F
1
2
3
4
BC(1:199)
155
_PPOFF
A202
SMLM339
VCCFE
R200
SM10.0KS
R207
SM825.0KS
R211
SM27.4KS
R205
SM1.00KS
C202
SM.1uFS
R213
SM5.62KS
R212
SM1.50KS
C206
SM.01uFS
R206
SM3.32KS
+12VFE
CR201
BZX84-C7V5
R201
SM1.21KS
CR200
BZX84-C5V1
CR202
BZX84-C7V5
R260
SM1.00KS
CR207
SMLM336-5
C262
SM33uF-10V
C263
SM.01uFS
VREF
TP203
2x5-ST-M-NN-SP
R500
SM10.0KS
R501
SM10.0KS
+12V_ADC
-12V_ADC
R502
R503
R504
R505
R506
R507
SM10.0KS
+12VFEP
+12VFE
+5VFE
-12VFEP
-12VFE
-5VFE
DRA
DRE
A204
7812-WITH50507022O
A210
7812-WITH50507022O
A209
7912-WITH505019968
A203
7912-WITH505019968
IN
OUT
COM
C214
C215
C221
C231
C242
C222
C223
C204
C213
C236
C241
C240
SM2.2uF-20V
C239
C268
C227
C218
C208
C238
C231
C205
C210
C265
C255
SM47uF-6V
C209
C226
C269
C235
C203
C5007
SM.01uFS
Q205
MTD10N05E
Q206
MTD10N05E
R263
R262
R264
R265
R266
R269
SM1.00KS
R267
SM10S
C7009
SM1000PFS
A213
SMLM324
C266
SM33uF-10V
C267
SM.01uFS
C200
C201
SM.01uFS
1 A
700 mA
850 mA
1 A
350 mA
800 mA
L202
L205
L208
L203
L201
L204
L206
L207
SMBEAD1206
+15V
+6V
-15V
-6V
VCC
VEE
VCCFE
VEEFE


LeCroy CORPORATION
MODEL : 900022
FRONT-END CHANNEL A (1/4)
DWG NO: 900022-S1
SH: 10 OF 56
ECO . 1000
DRAWN or Changed by: jon_b
CHKD
DIDIER.J
A1007 SMULN2003
A1009 SM74HC594
A1008 SM74HC594
A1005 SMDG442
A1010 SMAD705
A1004 SMAD705
A1006 SMLM339
L1022 50 OHMS
L1026 HZ
L1023 ACDC
L1024 :10HZ
L1021 :100HZ
L1020 :1050 OHMS
L1025 :150 OHMS
SMBEAD0805
RELFE_A(1:7)
BC(1:199)
OVFE_A
DVL_SENSE_A
DVL_REF_A
VGND_A
VOFF1_A
VOFF3_A
OFST_HI
VOFF3
2x2-ST-M-NW TP1001
+12VFE_A
-12VFE_A
VCCFE
RESET
TRFE_A
SCKA
SDIA
OVFE_A
OF_A
FROM FE


LeCroy CORPORATION
MODEL : 900022
FRONT-END CHANNEL A (2/4)
DWG NO: 900022-S1
SH: 11 of 56
ECO. : 1000
DRAWN or Changed by: jen_b
CHKD
DIDIER.L
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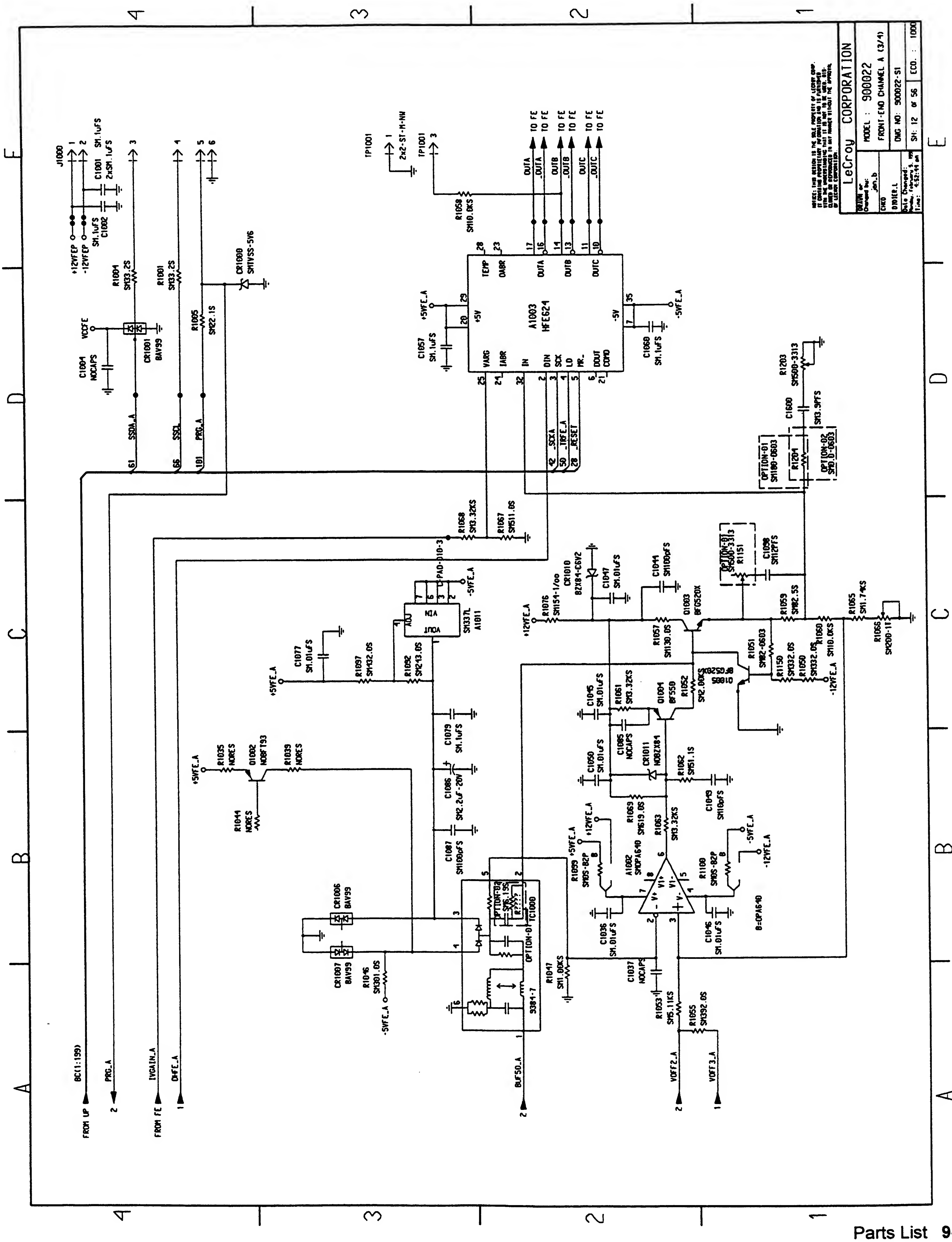
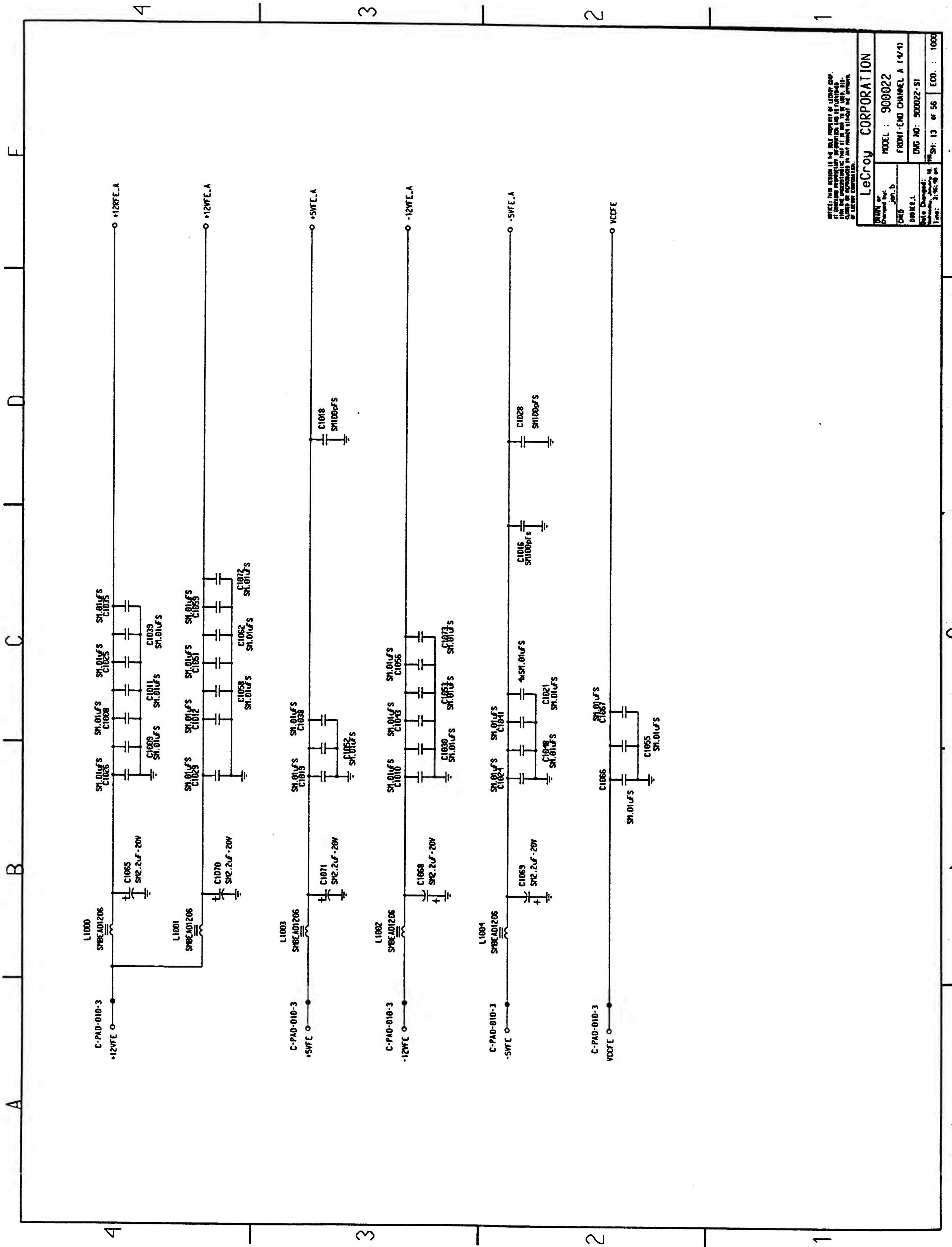
VGND_A
OVL_REF_A
OVL_SENSE_A
BUF50_A
VOFF2_A
VOFF1_A
RELFE_A(1:7)
PRG_A
INPUT
J1000
BNC-93XX-PROBE
CR1003
BAV99
C1074 SM.01uFS
R1088 SM1.00KS
R1089 SM1.00KS
R1008 SM10.0KS
R1006 SM10.0KS
C1005 SM.01uFS
RL1005 RL-RK1-12
RL1004 RL-RP1-12
RL1003 RL-RK1-12
RL1002 RL-RP1-12
RL1001 RL-RP1-12
RL1000 RL-RP1-12
RL1006 RL-TK1-12-P4NP
C1096 SM.01uFS
R1018 SM51.1S
R1012 SM154-1/MHF
R1013 SM154-1/MHF
R1103 SM243.0S
R1104 NORES
R1054 SM0S
C1042 SM820pFS
R1026 SM0S
R1048 SM10.0KS
TP1001 2x2-ST-M-NN
R1106 SM75.0S
R1027 SM1.82KS
R1031 SM365.0KS
R1028 SM365.0KS
A1000 SMCLC111
R1024 SM0S
Q1001 MMBF4416
R1029 SM100.0HS
CR1005 BAT18
C1601 0.5-2.5pF
R1021 SM100.0S
Q1000 BFG520X
R1015 SM332.0S
C1015 SM10pFS
R1019 SM51.1S
R1020 SM51.1S
R1036 SM392.0KS
R1038 SM50K-1T
C1031 SM.022uFS
C1032 SM.022uFS
Cx032 concensation
C1078 NOCAPS
R1034 SM1.00KS
R1105 SM1.82KS
CR1004 N082X
A1001 SMAD705
C1089 SM.001uFS
C1034 SM0.6-2.5pF
R1043 SM1.00MS
R1042 SM1.00MS
C1017 SM560pF.500V
C1092 SM.01uFS
R1025 SM357.0KS
R1032 SM357.0KS
R1040 SM4.75KS
R1037 SM392.0KS
R1017 SM113K-50PPM
C1084 nocaps
R1096 nores
R1098 nores
C1083 nocaps
Ground Loop
C1013 SM3.3pFS.500V
R1016 900.0K-.1/500V
R1009 SM1.21KS
R1023 SM200.0S
C1014 SM15pFS.500V
C1022 SM5-18pF
C1003 SM5-18pF
C1099 SM47PFS
R1010 SM56.2S
R1011 SM113K-50PPM
C1007 SM62pFS.5/
NO PLATED HOLE ON PIN 4
C1095 SM.01uFS
C1006 SM15pFS.500V
R1000 900.0K-.1/500V
R1003 SM2.4-0603
R1007 SM432.0S
C1602 SM.01uFS
C1090 SM.01uFS
L1010 SMBEAD805
L1011 SMBEAD805
R1002 SM301.0S
R1101 SM0S
R1102 SM0S
Mechanical Support for RL1001
:150 OHMS
HZ
:1050 OHMS
ACDC
:100HZ
:1MHZ
50 OHMS
+12VFE_A
-12VFE_A
+12RFE_A
+5VFE_A
-5VFE_A
A
B
C
D
E
F
1
2
3
4


LeCroy CORPORATION
MODEL : 900022
FRONT-END CHANNEL A (3/4)
DWG NO: 900022-S1
SH: 12 of 56
ECO. : 1000
A1003
HFE624
A1002
SMOPA640
A1011
SM337L
TC1000
9381-7
J1000
TP1001
2x2-ST-M-NW
TO FE
FROM UP
FROM FE
BC(1:199)
PRG_A
IVGAIN_A
OHFE_A
BUF50_A
VOFF2_A
VOFF3_A
SSDA_A
SSCL
+5VFE_A
-5VFE_A
+12VFE_A
-12VFE_A
VCCFE
OUTA
_OUTA
OUTB
_OUTB
OUTC
_OUTC
_SCKA
_TRFE_A
_RESET
OPTION-01
OPTION-02
OPTION-03
Q1003
BFG520X
Q1004
BF550
Q1005
BFG520X
Q1002
NDBFT93
CR1000
SMTVSS-5V6
CR1001
BAV99
CR1006
BAV99
CR1007
BAV99
CR1010
BZX84-C6V2
CR1011
NDBZX84
CPAD-010-3


+12RFE_A
+12VFE_A
+5VFE_A
-12VFE_A
-5VFE_A
VCCFE
+12VFE
+5VFE
-12VFE
-5VFE
VCCFE
C-PAD-010-3
L1000 SMBEAD1206
L1001 SMBEAD1206
L1003 SMBEAD1206
L1002 SMBEAD1206
L1004 SMBEAD1206
C1065 SM2.2uF-20V
C1070 SM2.2uF-20V
C1071 SM2.2uF-20V
C1068 SM2.2uF-20V
C1069 SM2.2uF-20V
C1026 SM.01uFS
C1009 SM.01uFS
C1008 SM.01uFS
C1011 SM.01uFS
C1025 SM.01uFS
C1039 SM.01uFS
C1035 SM.01uFS
C1029 SM.01uFS
C1012 SM.01uFS
C1058 SM.01uFS
C1051 SM.01uFS
C1062 SM.01uFS
C1059 SM.01uFS
C1072 SM.01uFS
C1019 SM.01uFS
C1038 SM.01uFS
C1052 SM.01uFS
C1018 SM100pFS
C1010 SM.01uFS
C1043 SM.01uFS
C1030 SM.01uFS
C1053 SM.01uFS
C1056 SM.01uFS
C1073 SM.01uFS
C1024 SM.01uFS
C1041 SM.01uFS
C1048 SM.01uFS
C1021 SM.01uFS
SM.01uFS
C1016 SM100pFS
C1028 SM100pFS
C1066 SM.01uFS
C1067 SM.01uFS
C1055 SM.01uFS
1
2
3
4
A
B
C
D
E
F
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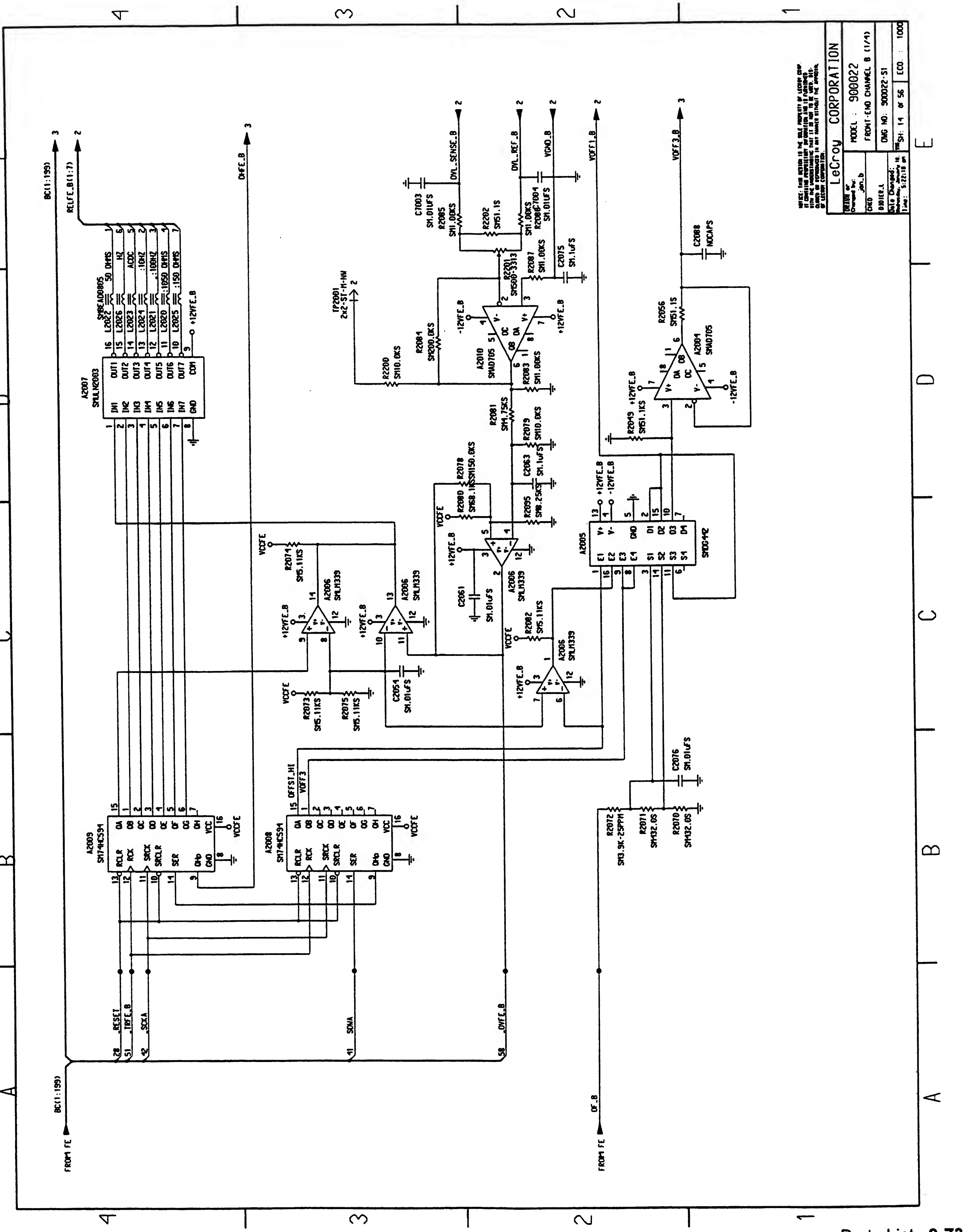
LeCroy CORPORATION
MODEL : 900022
FRONT-END CHANNEL A (4/4)
DWG NO: 900022-S1
SH: 13 of 56
ECO. : 1000
DRAWN or Changed by: jon_b
CHKD DIDIER.L
Date Changed:
Time: 3:45:40 am


LeCroy CORPORATION
MODEL : 9000022
FRONT-END CHANNEL B (1/4)
DWG NO: 900022-S1
SH: 14 of 56
ECO. : 1000
DRAWN or Changed by: jon.b
CHKD
DIDIER.L
Date Changed:
Time: 5:22:18 am
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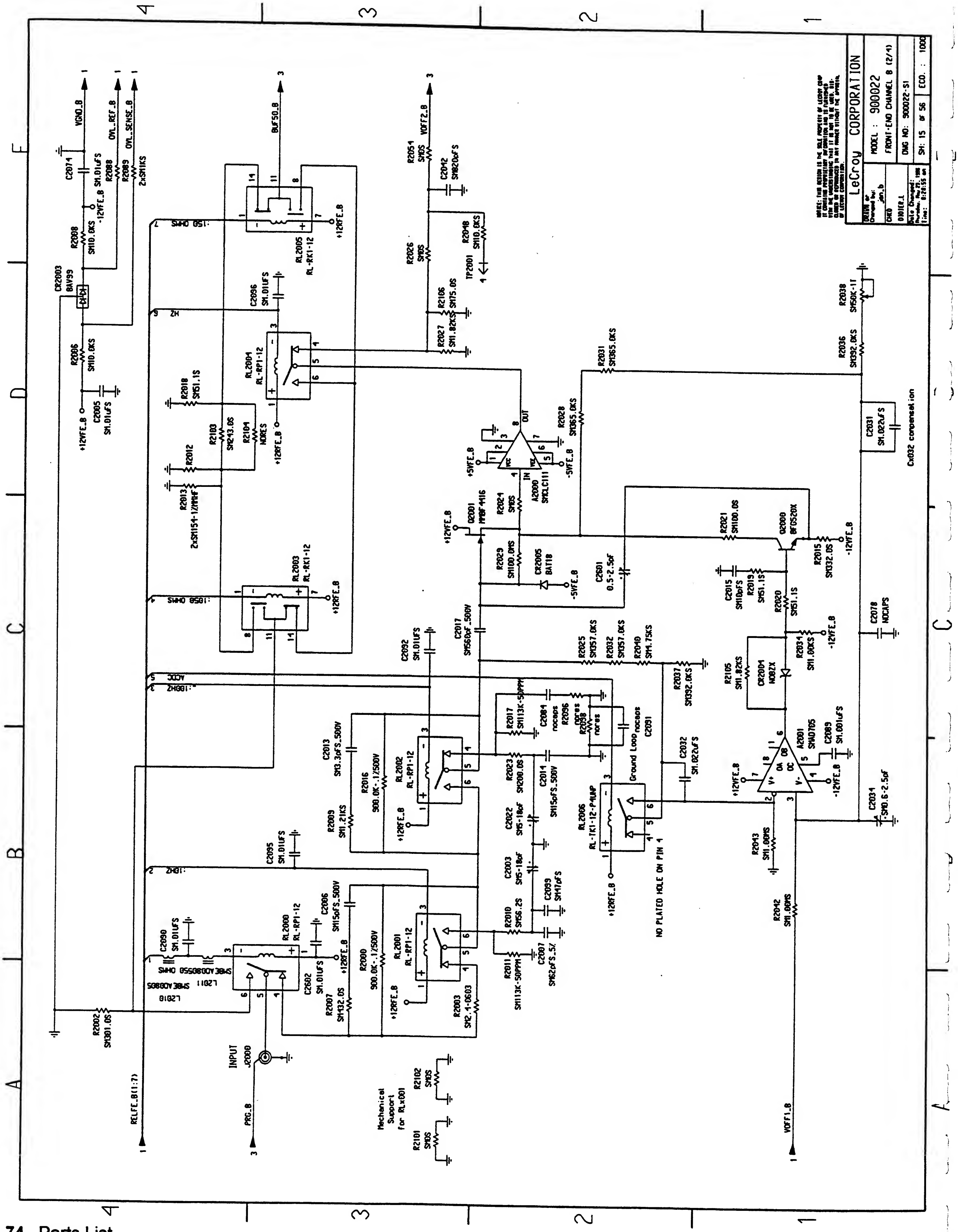
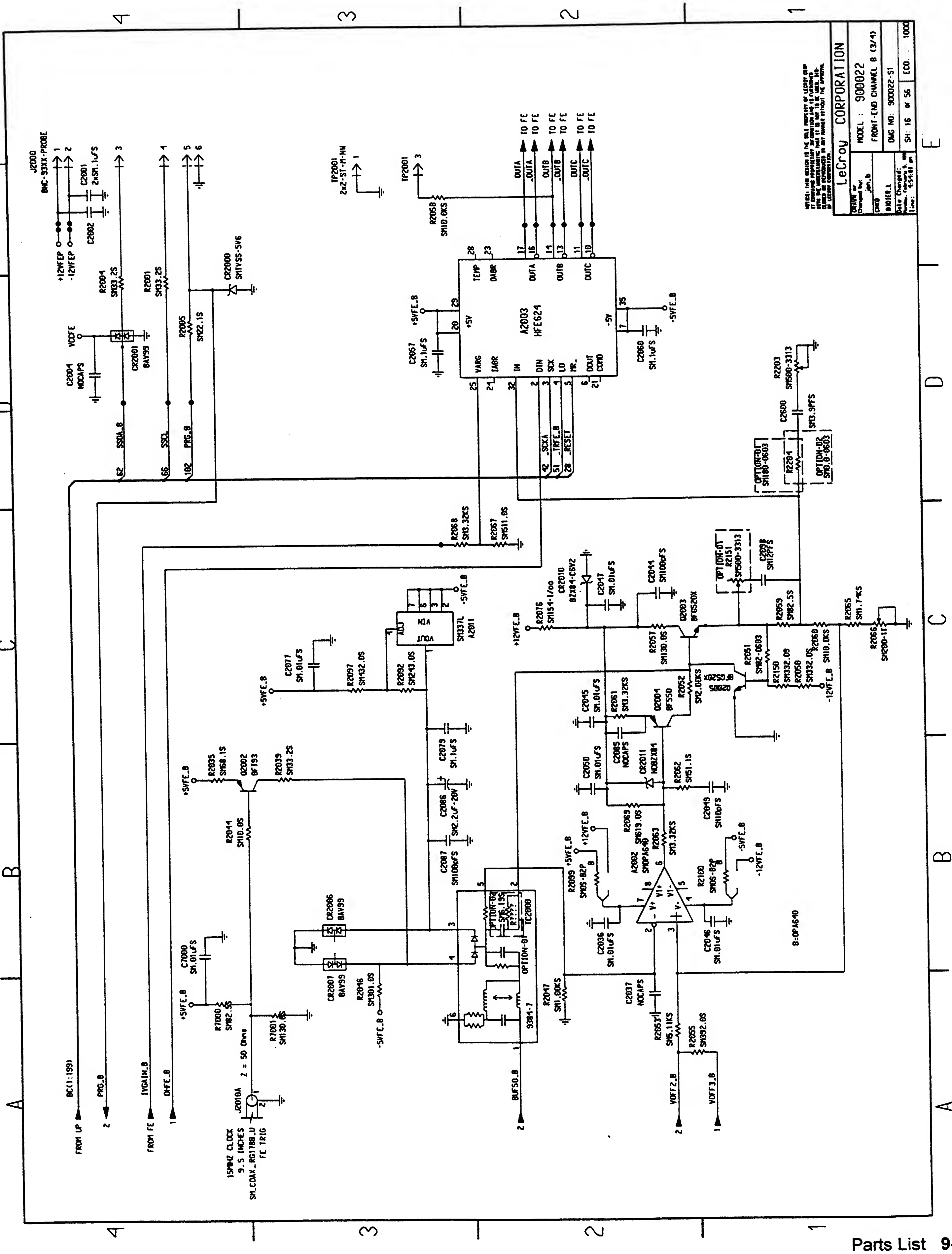
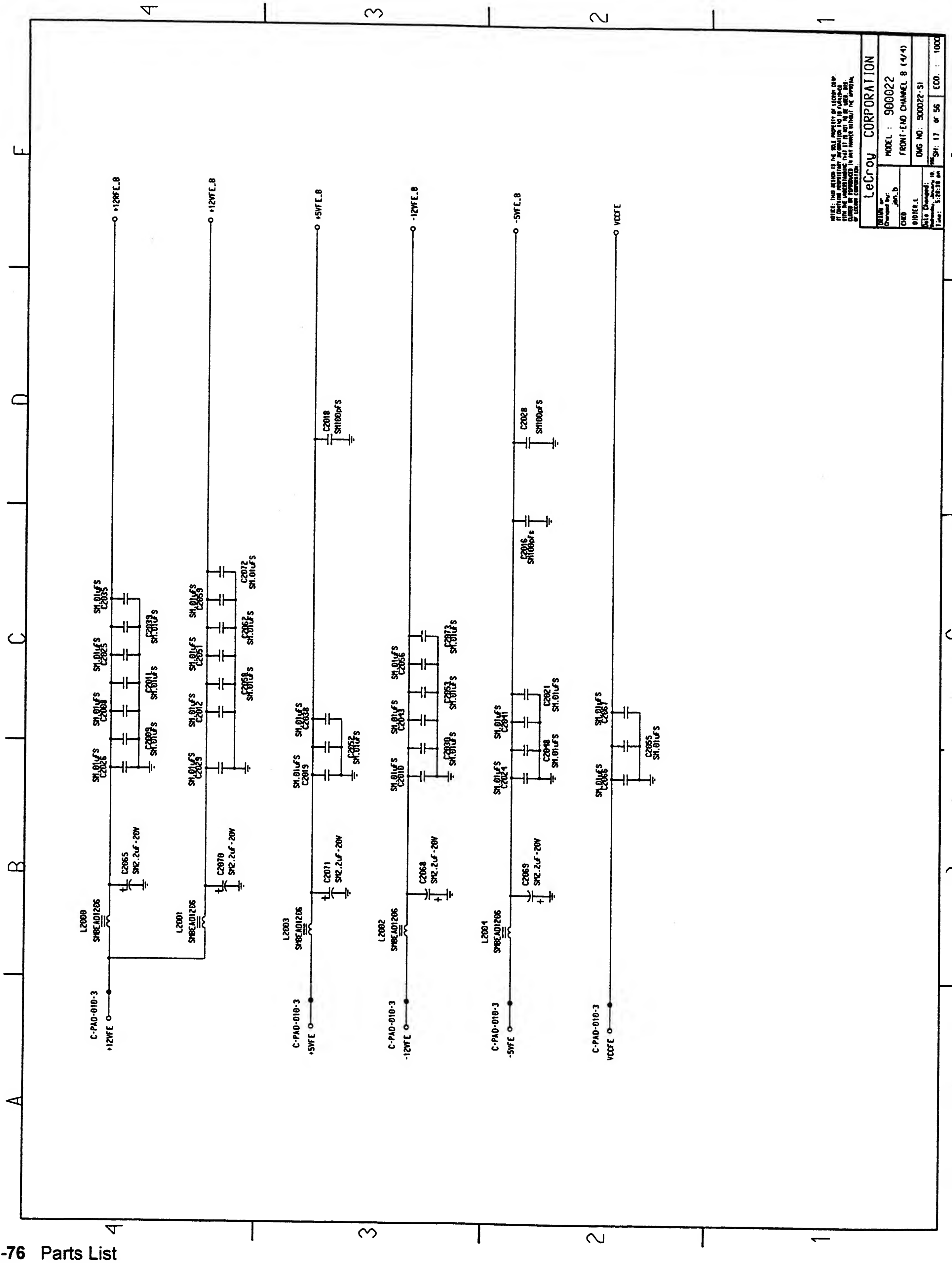
BC(1:199)
RELFE_B(1:7)
OVFE_B
OVL_SENSE_B
OVL_REF_B
VGND_B
VOFF1_B
VOFF3_B
A2007 SMULN2003
SMBEAD0805
L2022 50 OHMS
L2026 HZ
L2023 ACDC
L2024 :10HZ
L2021 :100HZ
L2020 :1050 OHMS
L2025 :150 OHMS
+12VFE_B
TP2001 2x2-ST-M-NW
A2010 SMAD705
A2004 SMAD705
A2005 SMDG442
A2006 SMLM339
A2009 SM74HC594
A2008 SM74HC594
R2085 SM1.00KS
R2202 SM51.1S
R2086 SM1.00KS
C7003 SM.01uFS
C7004 SM.01uFS
R2201 SM500-3313
R2087 SM1.00KS
C2075 SM.1uFS
C2088 NOCAPS
R2056 SM51.1S
R2084 SM200.0KS
R2200 SM10.0KS
R2083 SM1.00KS
R2081 SM4.75KS
R2079 SM10.0KS
C2063 SM.1uFS
R2078 SM150.0KS
R2080 SM68.1KS
R2095 SM8.25KS
R2049 SM51.1KS
R2074 SM5.11KS
R2082 SM5.11KS
C2061 SM.01uFS
C2054 SM.01uFS
R2073 SM5.11KS
R2075 SM5.11KS
C2076 SM.01uFS
R2072 SM3.9K-25PPM
R2071 SM432.0S
R2070 SM432.0S
VCCFE
-12VFE_B
OFFST_HI
VOFF3
_RESET
_IRFE_B
_SCKA
SDWA
_OVFE_B
OF_B
FROM FE


LeCroy CORPORATION
MODEL : 900022
FRONT-END CHANNEL B (2/4)
DWG NO: 900022-S1
SH: 15 OF 56
ECO. : 100
INPUT
J2000
PRG_B
RELFE_B(1:7)
VOFF1_B
VOFF2_B
VGND_B
OVL_REF_B
OVL_SENSE_B
BUF50_B
Mechanical Support for RLx001
Ground Loop
NO PLATED HOLE ON PIN 4
Cx032 compensation
RL2000 RL-RP1-12
RL2001 RL-RP1-12
RL2002 RL-RP1-12
RL2003 RL-RK1-12
RL2004 RL-RP1-12
RL2005 RL-RK1-12
RL2006 RL-TK1-12-P4UNP
A2000 SMCLC111
A2001 SMAD705
Q2000 BFG520X
Q2001 MMBF4416
CR2003 BAV99
CR2004 ND82X
CR2005 BAT18
TP2001
+12VFE_B
-12VFE_B
+12RFE_B
+5VFE_B
-5VFE_B
ACDC
1


LeCroy CORPORATION
MODEL : 900022
FRONT-END CHANNEL B (3/4)
DWG NO: 900022-S1
SH: 16 of 56
ECO. : 1000
DRAWN or Changed by: jon_b
CHKD
DIDIER_L
Date Changed:
Time: 4:54:01 am
A2003
HFE624
A2002
SMOPA640
B:OPA640
A2011
SM337L
TC2000
9384-7
J2000
BNC-93XX-PROBE
J2010A
Z = 50 Ohms
15MHZ CLOCK
9.5 INCHES
SM_COAX_RG178B_U
FE TRIG
TP2001
2x2-ST-M-NH
Q2002
BF193
Q2003
BFG520X
Q2004
BF550
Q2005
BFG520X
CR2000
SM1VSS-5V6
CR2001
BAV99
CR2006
BAV99
CR2007
BAV99
CR2010
BZX84-C6V2
CR2011
MOBZX84
OPTION-01
OPTION-02
SSDA_B
SSCL
PRG_B
_SCKA
_TRFE_B
_RESET
OUTA
_OUTA
OUTB
_OUTB
OUTC
_OUTC
TO FE
+12VFEP
-12VFEP
VCCFE
+5VFE_B
-5VFE_B
+12VFE_B
-12VFE_B
BC(1:159)
PRG_B
IVGAIN_B
DVFE_B
BUF50_B
VOFF2_B
VOFF3_B
FROM UP
FROM FE
A
B
C
D
E
1
2
3
4


+12RFE_B
+12VFE_B
+5VFE_B
-12VFE_B
-5VFE_B
VCCFE
C-PAD-010-3
+12VFE
+5VFE
-12VFE
-5VFE
VCCFE
L2000 SMBEAD1206
L2001 SMBEAD1206
L2003 SMBEAD1206
L2002 SMBEAD1206
L2004 SMBEAD1206
C2065 SM2.2uF-20V
C2070 SM2.2uF-20V
C2071 SM2.2uF-20V
C2068 SM2.2uF-20V
C2069 SM2.2uF-20V
C2018 SM100pFS
C2028 SM100pFS
C2016 SM100pFS
C2026 SM.01uFS
C2009 SM.01uFS
C2008 SM.01uFS
C2011 SM.01uFS
C2025 SM.01uFS
C2039 SM.01uFS
C2035 SM.01uFS
C2029 SM.01uFS
C2012 SM.01uFS
C2058 SM.01uFS
C2051 SM.01uFS
C2062 SM.01uFS
C2059 SM.01uFS
C2072 SM.01uFS
C2019 SM.01uFS
C2052 SM.01uFS
C2038 SM.01uFS
C2010 SM.01uFS
C2030 SM.01uFS
C2043 SM.01uFS
C2053 SM.01uFS
C2056 SM.01uFS
C2073 SM.01uFS
C2024 SM.01uFS
C2048 SM.01uFS
C2041 SM.01uFS
C2021 SM.01uFS
C2066 SM.01uFS
C2055 SM.01uFS
C2067 SM.01uFS
A
B
C
D
E
1
2
3
4
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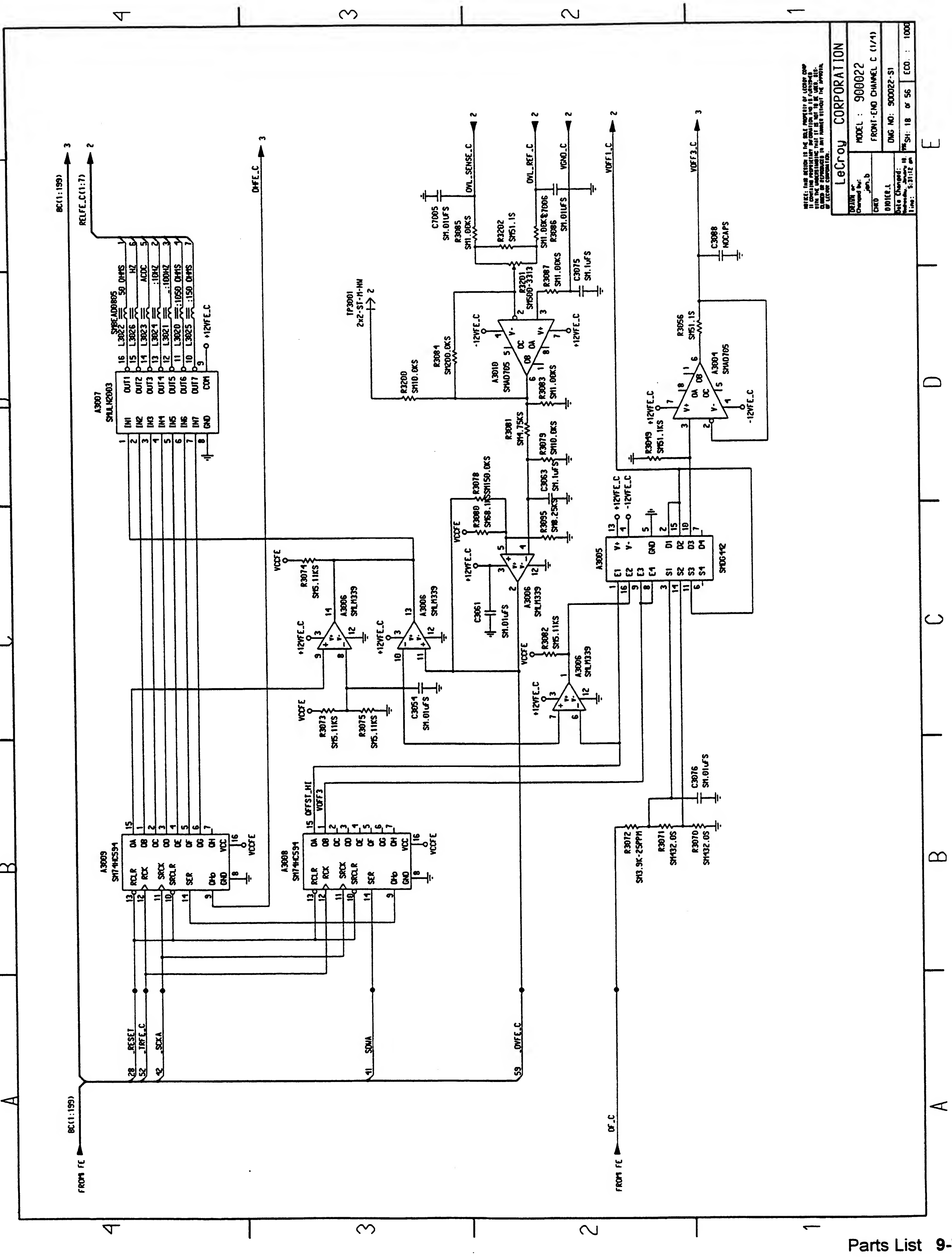
LeCroy CORPORATION
DRAWN or Changed by: jon_b
CHKD
DIDIER_L
Date Changed:
Time: 5:28:38 am
MODEL : 900022
FRONT-END CHANNEL B (4/4)
DWG NO: 900022-S1
SH: 17 of 56
ECO. : 1000


LeCroy CORPORATION
MODEL : 900022
FRONT-END CHANNEL C (1/4)
DWG NO: 900022-S1
SH: 18 OF 56
ECO. : 1000
DRAWN or Changed by: jon_b
CHKD
DIDIER.L
Date Changed:
Time: 5:31:12 am
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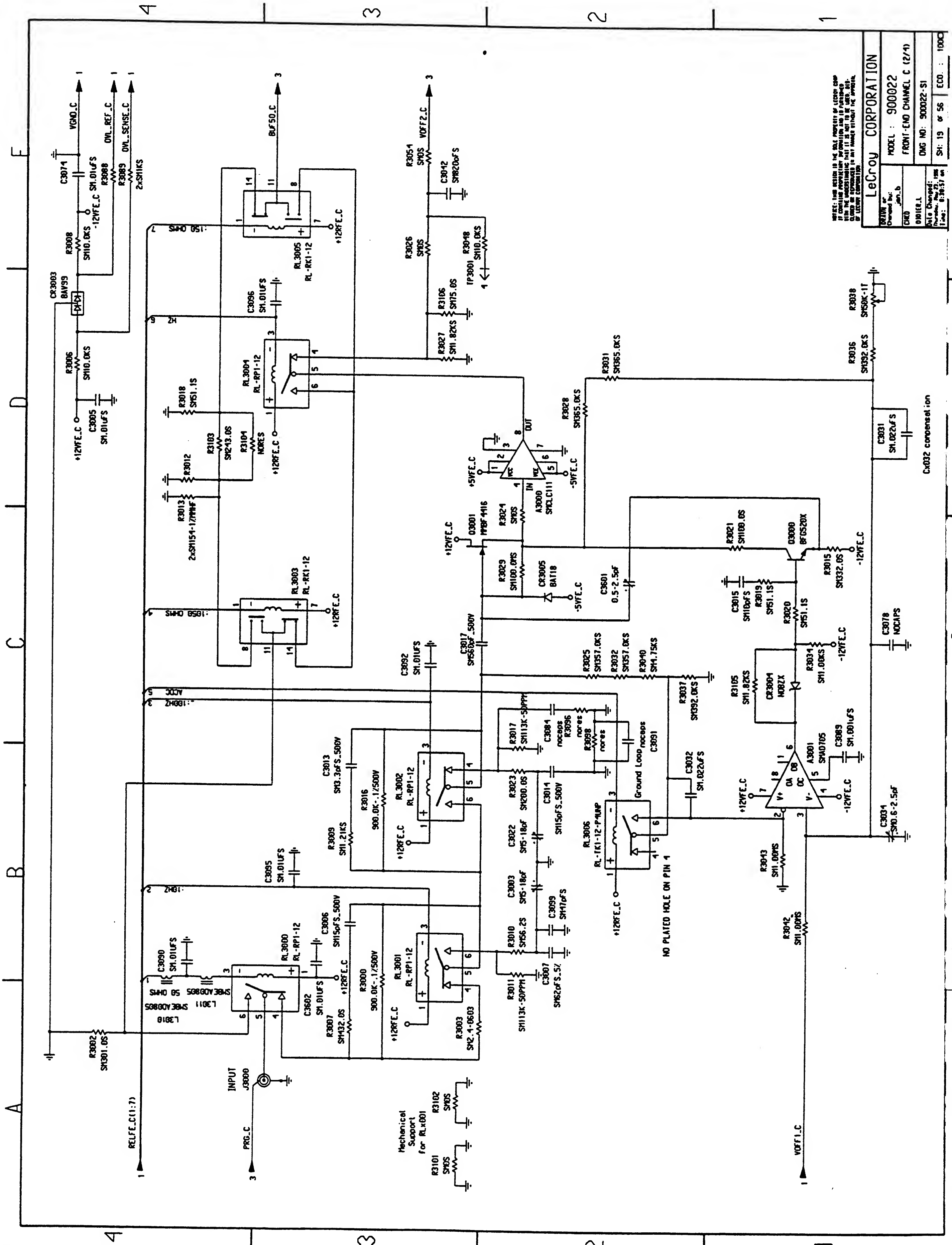
BC(1:199)
RELFE_C(1:7)
OHFE_C
OVL_SENSE_C
OVL_REF_C
VGND_C
VOFF1_C
VOFF3_C
FROM FE
OF_C
_RESET
_TRFE_C
SCKA
SDNA
_OVFE_C
A3007 SMULN2003
A3009 SM74HC594
A3008 SM74HC594
A3005 SMDG442
A3006 SMLM339
A3010 SMAD705
A3004 SMAD705
TP3001 2x2-ST-M-HW
SMBEAD0805
L3022 50 OHMS
L3026 HZ
L3023 ACDC
L3024 :10HZ
L3021 :100HZ
L3020 :1050 OHMS
L3025 :150 OHMS
C7005 SM.01uFS
R3085 SM1.0KS
R3202 SM51.1S
R3086 SM1.0KS
C7006 SM.01uFS
R3201 SM500-3313
R3087 SM1.0KS
C3075 SM.1uFS
R3084 SM200.0KS
R3200 SM10.0KS
R3083 SM1.00KS
R3081 SM4.75KS
R3079 SM10.0KS
C3063 SM.1uFS
R3078 SM150.0KS
R3080 SM68.1KS
R3095 SM8.25KS
C3061 SM.01uFS
R3074 SM5.11KS
R3082 SM5.11KS
R3073 SM5.11KS
R3075 SM5.11KS
C3054 SM.01uFS
R3056 SM51.1S
R3049 SM51.1KS
C3088 NOCAPS
C3076 SM.01uFS
R3072 SM3.9K-25PPM
R3071 SM432.0S
R3070 SM432.0S
OFFST_HI
VOFF3
VCCFE
+12VFE_C
-12VFE_C
A
B
C
D
E
1
2
3
4


LeCroy CORPORATION
MODEL : 9000022
FRONT-END CHANNEL C (2/4)
DWG NO: 900022-S1
SH: 19 of 56
ECO. : 100
DRAWN or Changed by: jan_b
CHKD
DIDIER.L
Date Changed: Thursday, May 23, 1996 Time: 8:30:57 am
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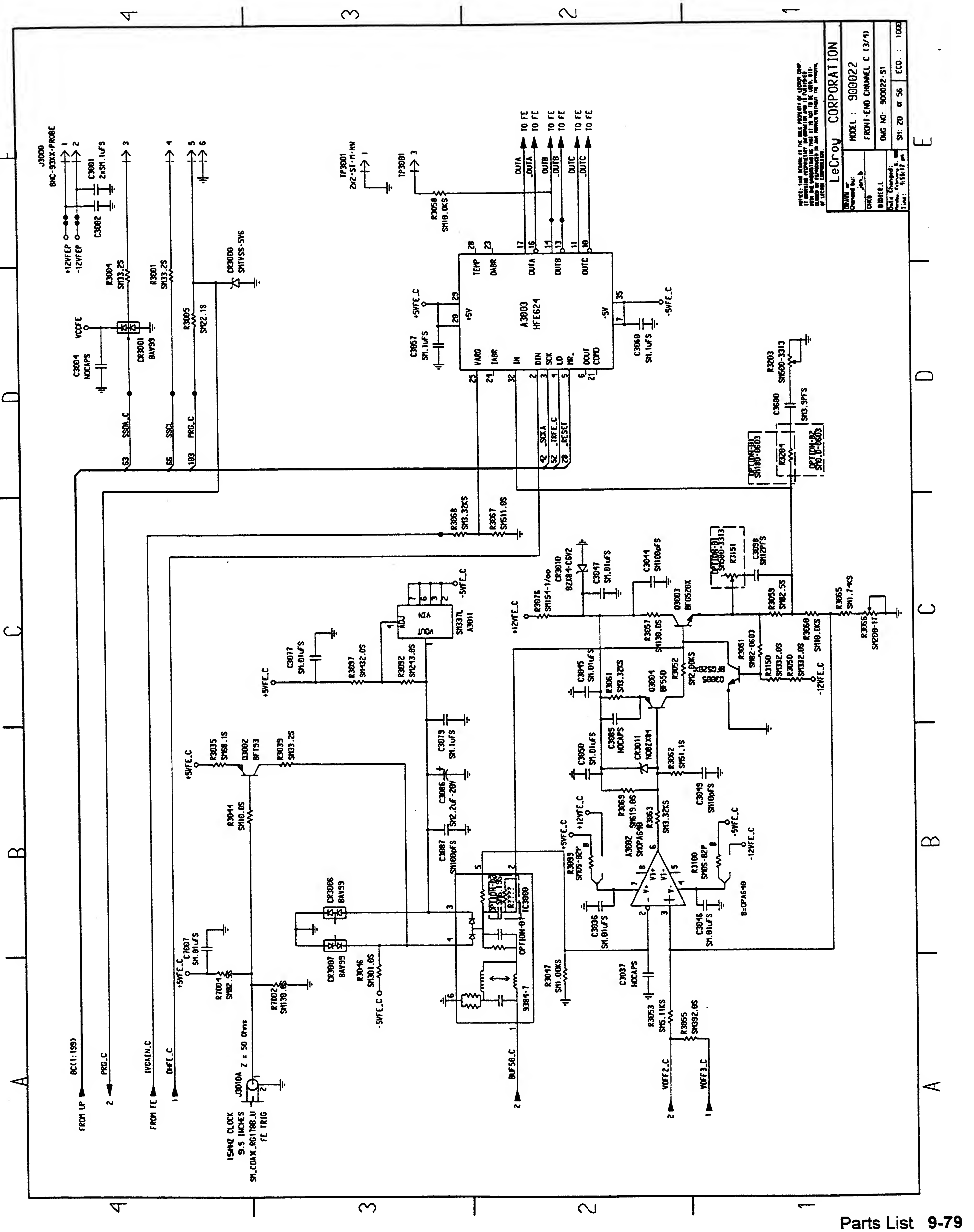
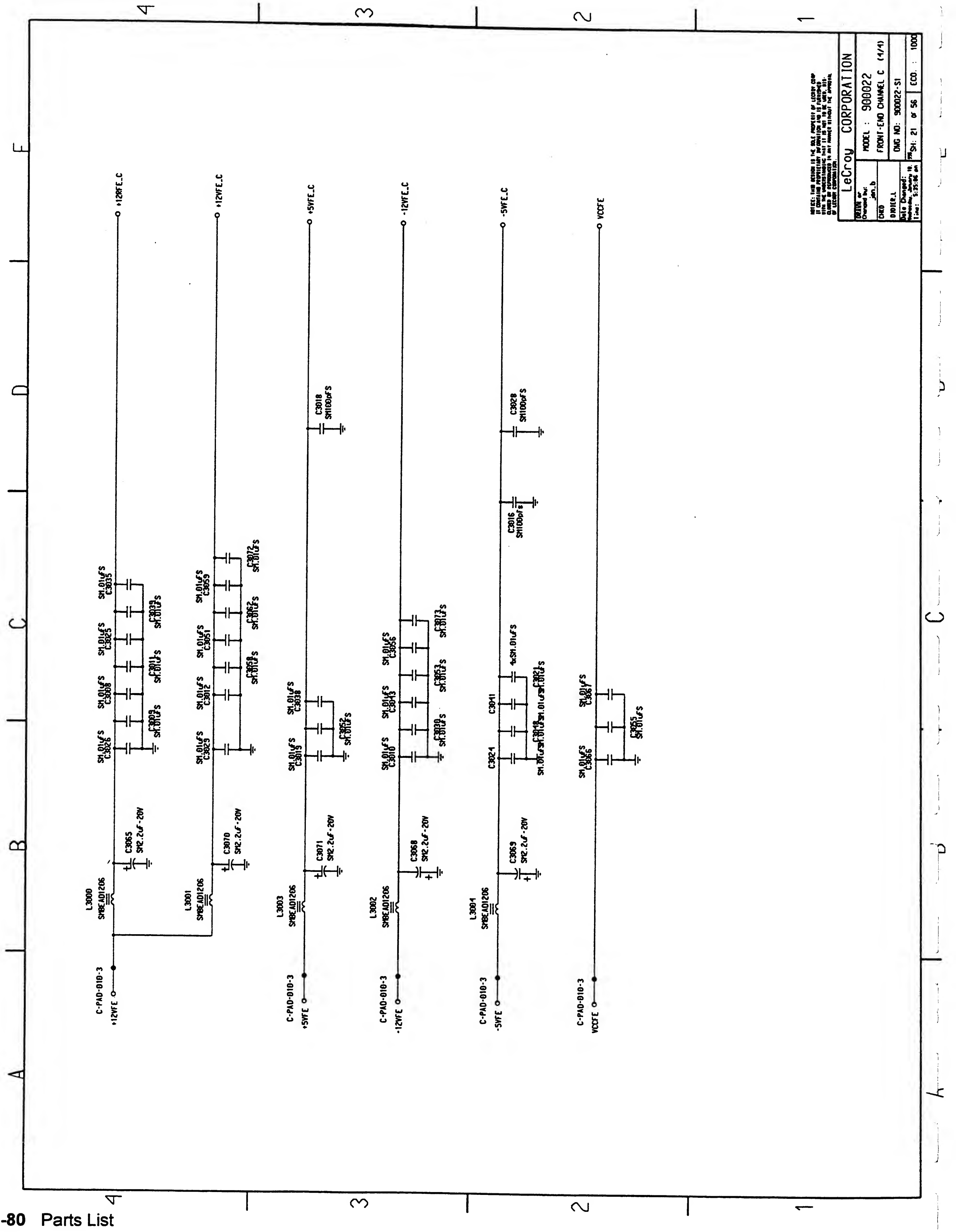
VGND_C
OVL_REF_C
OVL_SENSE_C
BUF50_C
VOFF2_C
VOFF1_C
RELFE_C(1:7)
PRG_C
INPUT
J3000
CR3003 BAV99
C3074
R3088
R3089 2xSM1KS
R3008 SM10.0KS
-12VFE_C
+12VFE_C
+12RFE_C
+5VFE_C
-5VFE_C
R3006 SM10.0KS
C3005 SM.01uFS
RL3005 RL-RK1-12
RL3004 RL-RP1-12
RL3003 RL-RK1-12
RL3002 RL-RP1-12
RL3001 RL-RP1-12
RL3000 RL-RP1-12
RL3006 RL-TK1-12-P4UNP
:150 OHMS
:1050 OHMS
HZ
ACDC
:100HZ
:10HZ
50 OHMS
C3096 SM.01uFS
R3018 SM51.1S
R3103 SM243.0S
R3104 NORES
R3012
R3013 2xSM154-1/MMF
R3054 SM0S
C3042 SM820pFS
R3026 SM0S
R3048 SM10.0KS
TP3001
R3106 SM75.0S
R3027 SM1.82KS
A3000 SMCLC111
OUT
IN
R3024 SM0S
Q3001 MMBF4416
R3029 SM100.0MS
CR3005 BAT18
C3601 0.5-2.5pF
R3028 SM365.0KS
R3031 SM365.0KS
R3036 SM392.0KS
R3038 SM50K-1T
C3031 SM.022uFS
Cx032 condensation
R3021 SM100.0S
Q3000 BFQ520X
R3015 SM332.0S
C3015 SM10pFS
R3019 SM51.1S
R3020 SM51.1S
C3078 NOCAPS
R3034 SM1.00KS
CR3004 N08ZX
R3105 SM1.82KS
R3025 SM357.0KS
R3032 SM357.0KS
R3040 SM4.75KS
R3037 SM392.0KS
C3017 SM560pF_500V
C3092 SM.01uFS
C3013 SM3.3pFS_500V
R3016 900.0K-.1/500V
R3009 SM1.21KS
R3017 SM113K-50PPM
C3084 nocaps
R3096 nores
R3098 nores
C3091 nocaps
Ground Loop
R3023 SM200.0S
C3014 SM15pFS_500V
C3032 SM.022uFS
A3001 SMAD705
C3089 SM.001uFS
C3034 SM0.6-2.5pF
R3043 SM1.00MS
R3042 SM1.00MS
C3022 SM5-18pF
C3003 SM5-18pF
C3099 SM47pFS
NO PLATED HOLE ON PIN 4
C3095 SM.01uFS
C3006 SM15pFS_500V
R3000 900.0K-.1/500V
R3010 SM56.2S
R3011 SM113K-50PPM
C3007 SM620pFS_5
R3003 SM2.4-0603
C3602 SM.01uFS
R3007 SM432.0S
C3090 SM.01uFS
L3010 SMBEAD0805
L3011 SMBEAD0805
R3002 SM301.0S
Mechanical Support for RLx001
R3101 SM0S
R3102 SM0S
A
B
C
D
E
F
1
2
3
4


LeCroy CORPORATION
MODEL : 900022
FRONT-END CHANNEL C (3/4)
DWG NO: 900022-S1
SH: 20 OF 56
ECO. : 1000
DRAWN or Changed by: jan_b
CHKD
DIDIER_L
Date Changed:
Time: 4:55:17 am
NOTICE: THIS DESIGN IS THE SOLE PROPERTY OF LECROY CORP. IT CONTAINS PROPRIETARY INFORMATION AND IS FURNISHED WITH THE UNDERSTANDING THAT IT IS NOT TO BE USED, DISCLOSED OR REPRODUCED IN ANY MANNER WITHOUT THE APPROVAL OF LECROY CORPORATION.
J3000
BNC-93XX-PROBE
+12VFEP
-12VFEP
C3001 2xSM.1uFS
C3002
R3004 SM33.2S
VCCFE
CR3001 BAV99
C3004 NOCAPS
R3001 SM33.2S
R3005 SM22.1S
CR3000 SMTVSS-5V6
SSDA_C
SSCL
PRG_C
TP3001 2X2-ST-M-NW
R3058 SM10.0KS
A3003 HFE624
TEMP
OABR
OUTA
OUTB
OUTC
+5V
-5V
VARG
IABR
IN
DIN
SCK
LD
MR_
DOUT
COMO
+5VFE_C
-5VFE_C
C3057 SM.1uFS
C3060 SM.1uFS
OUTA
_OUTA
OUTB
_OUTB
OUTC
_OUTC
TO FE
_SCKA
_TRFE_C
_RESET
R3203 SM500-3313
C3600 SM3.9PFS
OPTION-B1 SM180-0603
R3204
OPTION-B2 SM0.0-0603
R3068 SM3.32KS
R3067 SM511.0S
A3011 SM337L
VIN
VOUT
ADJ
+12VFE_C
R3076 SM154-1/oo
CR3010 BZX84-C6V2
C3047 SM.01uFS
C3044 SM100pFS
Q3003 BFG520X
OPTION-B1 SM500-3313
R3151
C3098 SM12PFS
R3059 SM82.5S
R3065 SM1.74KS
R3066 SM200-11
R3060 SM10.0KS
C3077 SM.01uFS
R3097 SM432.0S
R3092 SM243.0S
R3057 SM130.0S
C3045 SM.01uFS
R3061 SM3.32KS
Q3004 BF550
R3052 SM2.00KS
Q3005 BFG520X
R3051 SM82-0603
R3150 SM332.0S
R3050 SM332.0S
-12VFE_C
C3079 SM.1uFS
C3086 SM2.2uF-20V
C3087 SM100pFS
C3050 SM.01uFS
C3085 NOCAPS
CR3011 NOBZX84
R3062 SM51.1S
R3069 SM619.0S
R3063 SM3.32KS
C3049 SM10pFS
A3002 SMOPA640
R3099 SMOS-82P
R3100 SMOS-82P
B=OPA640
C3036 SM.01uFS
C3046 SM.01uFS
R3035 SM68.1S
Q3002 BFT93
R3039 SM33.2S
R3041 SM10.0S
CR3006 BAV99
CR3007 BAV99
OPTION-B2
OPTION-B1
TC3000
9384-7
R3046 SM301.0S
R3047 SM1.00KS
C3037 NOCAPS
R3053 SM5.11KS
R3055 SM392.0S
C7007 SM.01uFS
R7004 SM82.5S
R7002 SM130.0S
J3010A
Z = 50 Ohms
15MHZ CLOCK
9.5 INCHES
SM_COAX_RG178B_U
FE TRIG
BC(1:199)
PRG_C
IVGAIN_C
DVFE_C
FROM UP
FROM FE
BUF50_C
VOFF2_C
VOFF3_C


+12VFE.C
+12VFE.C
+5VFE.C
-12VFE.C
-5VFE.C
VCCFE
C3018 SM100pFS
C3028 SM100pFS
C3016 SM100pFS
SM.01uFS C3035
C3039 SM.01uFS
SM.01uFS C3025
C3011 SM.01uFS
SM.01uFS C3008
C3009 SM.01uFS
SM.01uFS C3026
SM.01uFS C3059
C3072 SM.01uFS
SM.01uFS C3051
C3062 SM.01uFS
SM.01uFS C3012
C3058 SM.01uFS
SM.01uFS C3029
SM.01uFS C3038
C3052 SM.01uFS
SM.01uFS C3019
SM.01uFS C3056
C3073 SM.01uFS
SM.01uFS C3043
C3053 SM.01uFS
SM.01uFS C3010
C3039 SM.01uFS
C3041
4xSM.01uFS
C3021 SM.01uFS
C3024
C3040 SM.01uFS
SM.01uFS
SM.01uFS C3067
C3055 SM.01uFS
SM.01uFS C3066
C3065 SM2.2uF-20V
C3070 SM2.2uF-20V
C3071 SM2.2uF-20V
C3068 SM2.2uF-20V
C3069 SM2.2uF-20V
L3000 SMBEAD1206
L3001 SMBEAD1206
L3003 SMBEAD1206
L3002 SMBEAD1206
L3004 SMBEAD1206
C-PAD-010-3
+12VFE
C-PAD-010-3
+5VFE
C-PAD-010-3
-12VFE
C-PAD-010-3
-5VFE
C-PAD-010-3
VCCFE
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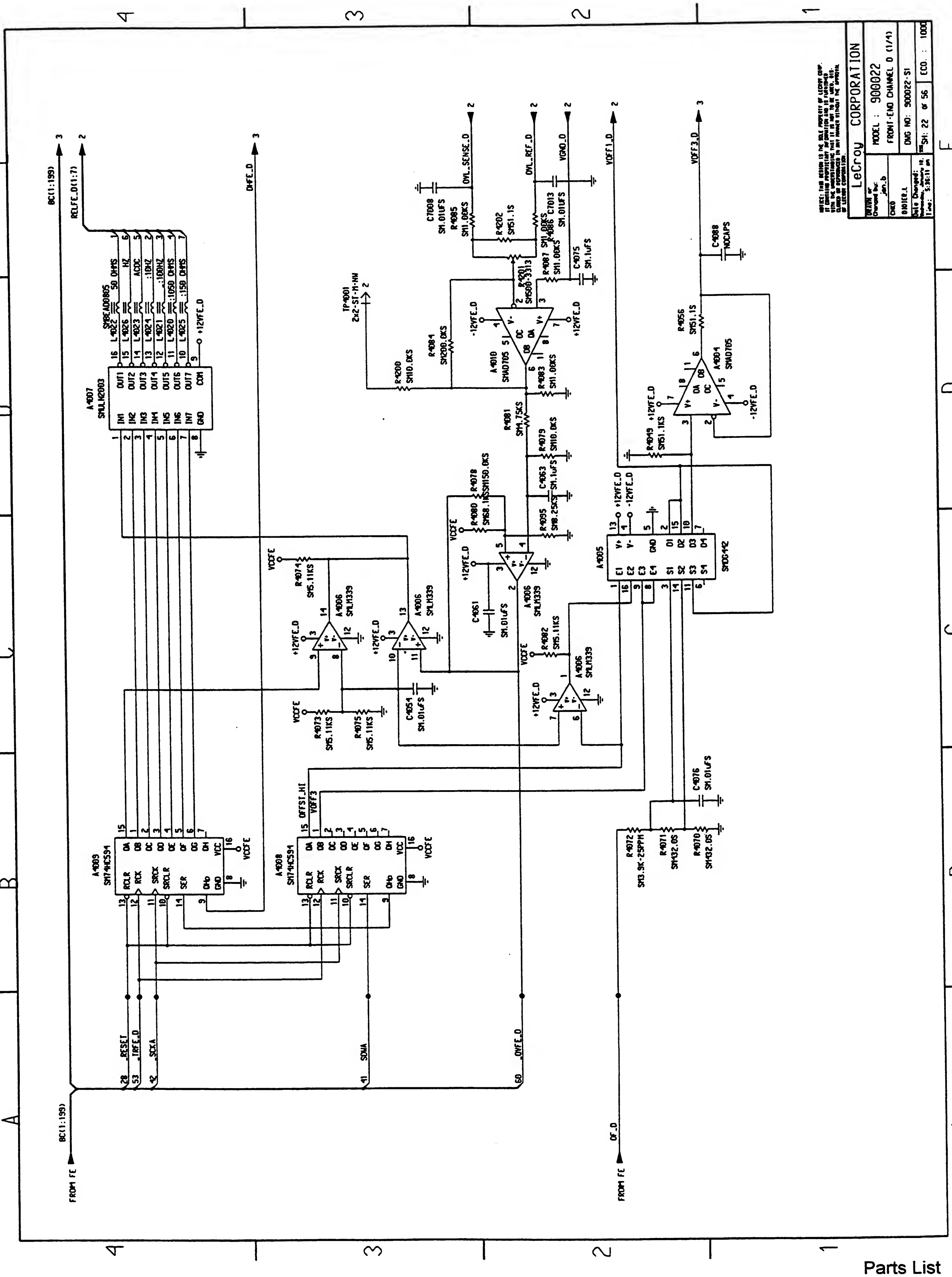
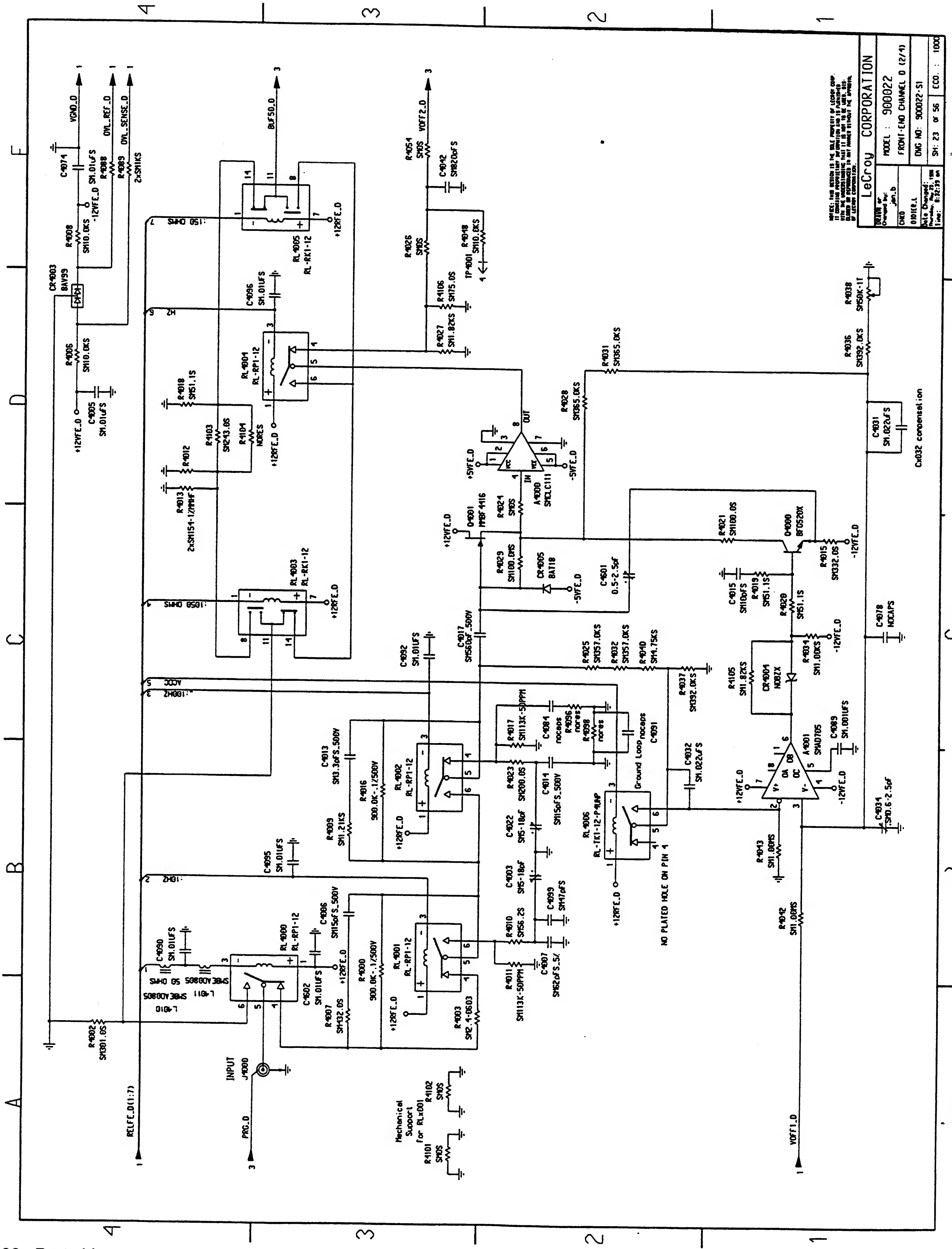
LeCroy CORPORATION
MODEL : 900022
FRONT-END CHANNEL C (4/4)
DWG NO: 900022-S1
SH: 21 OF 56
ECO. : 1000
DRAWN or Changed by: jon_b
CHKD
DIDIER.L
Date Changed:
Time: 5:35:06 am
4
3
2
1
F
E
D
C
B
A


LeCroy CORPORATION
MODEL : 900022
FRONT-END CHANNEL 0 (1/4)
DWG NO: 900022-S1
SH: 22 of 56
ECO: 1000
A4007 SMULN2003
A4009 SM74HC594
A4008 SM74HC594
A4005 SMDG442
A4006 SMLM339
A4010 SMAD705
A4004 SMAD705
TP4001
BC(1:199)
RELFE_D(1:7)
DHFE_D
OVL_SENSE_D
OVL_REF_D
VGND_D
VOFF1_D
VOFF3_D
OFFST_HI
VOFF3
RESET
TRFE_D
SCKA
SDWA
OVFE_D
OF_D
FROM FE
VCCFE
+12VFE_D
-12VFE_D
50 OHMS
HZ
ACDC
:10HZ
:100HZ
:1050 OHMS
:150 OHMS
SMBEAD0805


LeCroy CORPORATION
MODEL : 900022
FRONT-END CHANNEL 0 (2/4)
DWG NO: 900022-S1
SH: 23 OF 56
ECO. : 1000
DRAWN or Changed by: jon.b
CHKD DIDIER.L
Date Changed: Thursday, May 25, 1995
Time: 8:32:39 am
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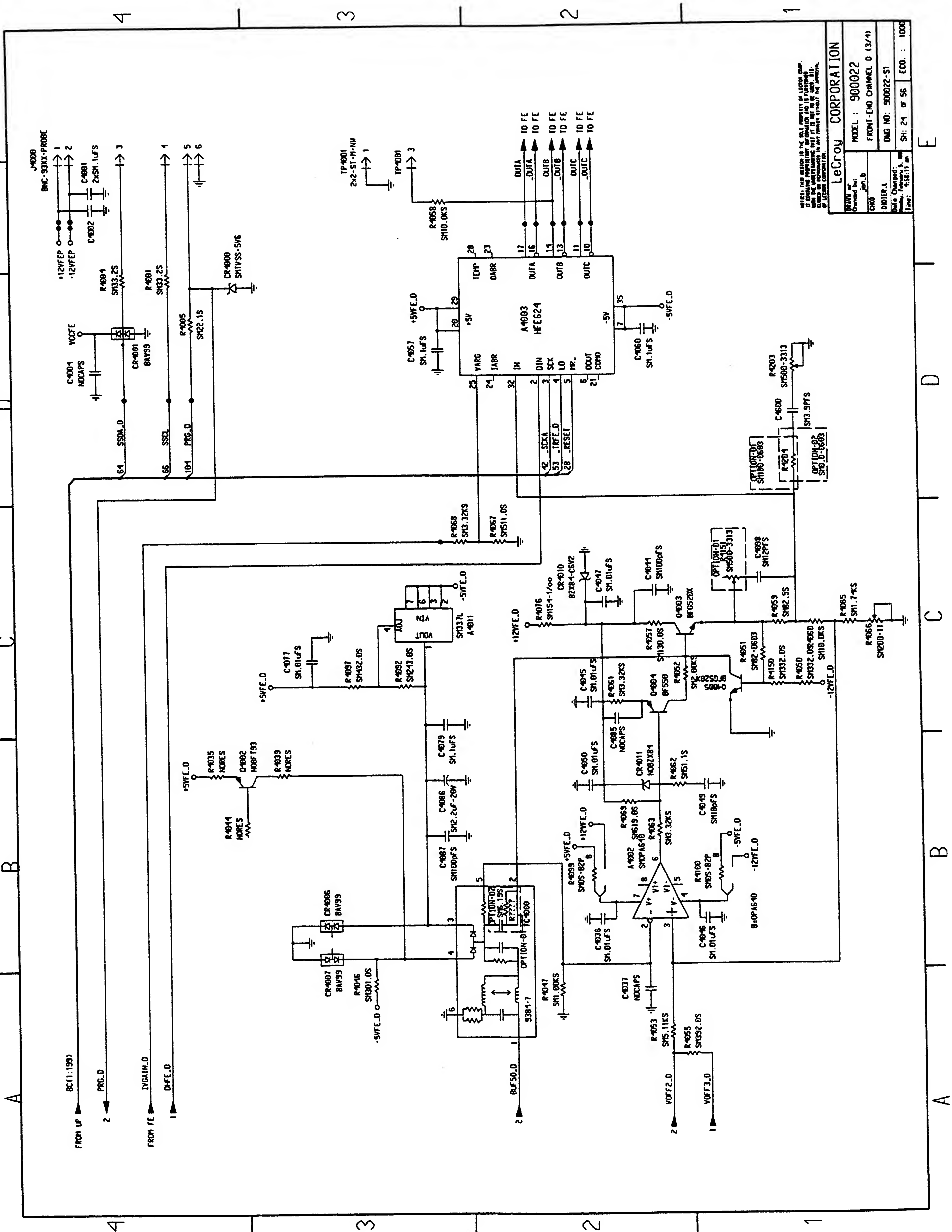
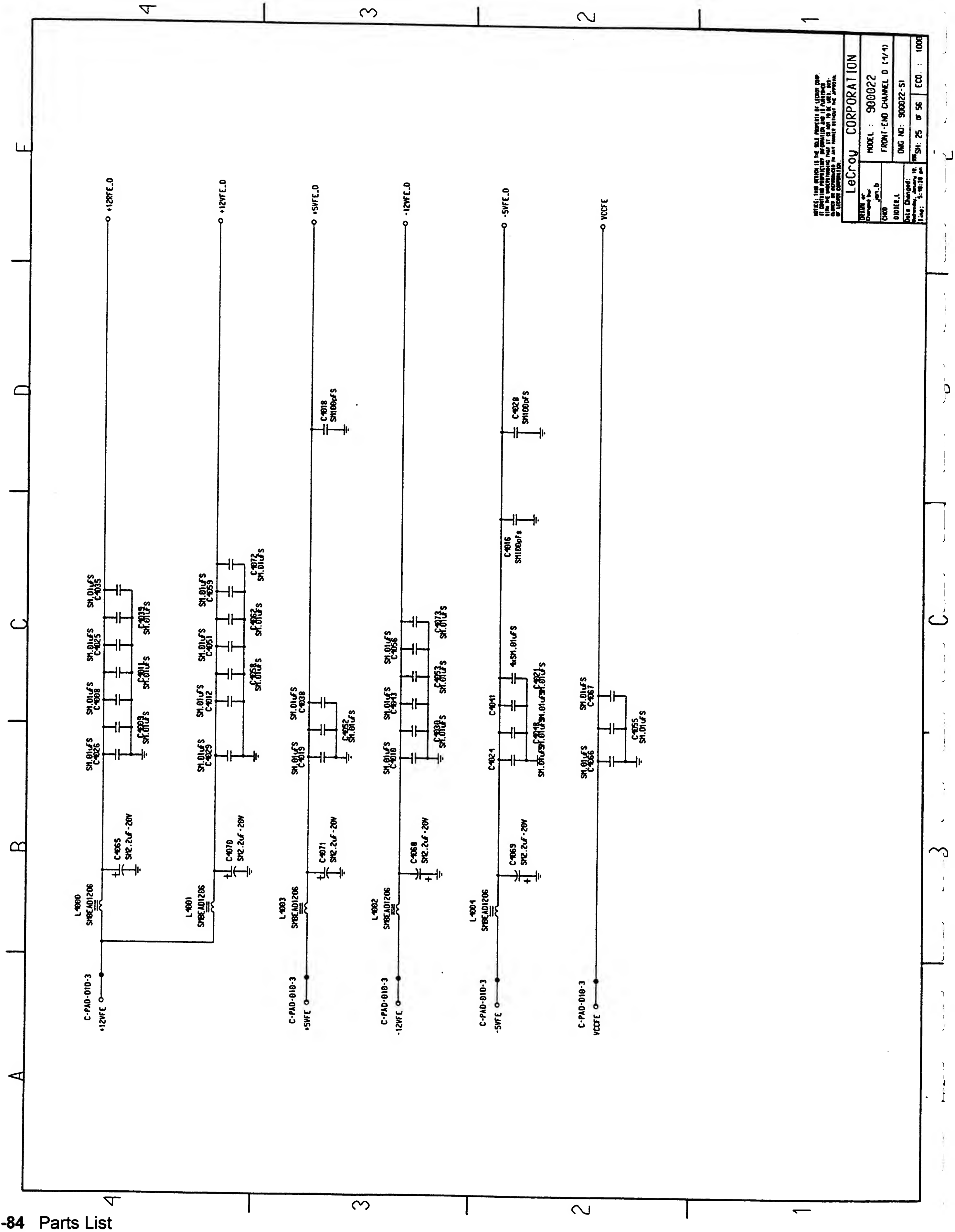
VGND_D
OVL_REF_D
OVL_SENSE_D
BUF50_D
VOFF2_D
VOFF1_D
RELFE_D(1:7)
PRG_D
INPUT J4000
+12VFE_D
-12VFE_D
+12RFE_D
+5VFE_D
-5VFE_D
RL4005 RL-RK1-12
RL4004 RL-RP1-12
RL4003 RL-RK1-12
RL4002 RL-RP1-12
RL4001 RL-RP1-12
RL4000 RL-RP1-12
RL4006 RL-TK1-12-P4UNP
A4000 SMCLC111
A4001 SMAD705
Q4000 BFG520X
Q4001 MMBF4416
CR4003 BAV99
CR4004 NO8ZX
CR4005 BAT18
TP4001
150 OHMS
1M OHMS
50 OHMS
AC/DC
100MHZ
20MHZ
Ground Loop nocaps
NO PLATED HOLE ON PIN 4
Cx032 condensation
Mechanical Support for RLx001
R4101 SM0S
R4102 SM0S
R4002 SM301.0S
R4000 900.0K-.1/500V
R4016 900.0K-.1/500V
L4010 SMBEAD0805
L4011 SMBEAD0805
C4017 SM560pF_500V
C4031 SM.022uFS
C4032 SM.022uFS
C4034 SM0.6-2.5pF
C4501 0.5-2.5pF
R4038 SM50K-1T
R4036 SM392.0KS
R4031 SM365.0KS
R4028 SM365.0KS
R4054 SM0S
C4042 SM820pFS
R4026 SM0S
R4048 SM10.0KS
R4106 SM75.0S
R4027 SM1.82KS
R4006 SM10.0KS
R4008 SM10.0KS
R4088
R4089 2xSM1KS
C4074
C4005 SM.01uFS
C4096 SM.01uFS
R4018 SM51.1S
R4103 SM243.0S
R4104 NORES
R4012
R4013 2xSM154-1/2MHF
R4024 SM0S
R4029 SM100.0MS
R4021 SM100.0S
R4015 SM332.0S
C4015 SM10pFS
R4019 SM51.1S
R4020 SM51.1S
C4078 NOCAPS
R4025 SM357.0KS
R4032 SM357.0KS
R4040 SM4.75KS
R4037 SM392.0KS
R4105 SM1.82KS
R4034 SM1.0KS
C4089 SM.001uFS
C4092 SM.01uFS
R4017 SM113K-50PPM
C4084 nocaps
R4096 nores
R4098 nores
C4091
C4013 SM3.3pFS_500V
R4009 SM1.21KS
R4023 SM200.0S
C4014 SM15pFS_500V
C4022 SM5-18pF
C4003 SM5-18pF
C4099 SM47pFS
R4043 SM1.00MS
R4042 SM1.00MS
C4095 SM.01uFS
C4090 SM.01uFS
C4006 SM15pFS_500V
C4502 SM.01uFS
R4007 SM332.0S
R4010 SM56.2S
R4011 SM113K-50PPM
C4007 SM62pFS_5/
R4003 SM2.4-0603
A B C D E
1 2 3 4


LeCroy CORPORATION
MODEL : 900022
FRONT-END CHANNEL D (3/4)
DWG NO: 900022-S1
SH: 24 of 56
ECO. : 1000
J4000 BNC-93XX-PROBE
+12VFEP
-12VFEP
C4001 2xSM.1uFS
C4002
R4004 SM33.2S
R4001 SM33.2S
R4005 SM22.1S
CR4000 SM1VSS-5V6
VCCFE
C4004 NOCAPS
CR4001 BAV99
SSDA_D
SSCL
PRG_D
TP4001 2x2-ST-M-NH
R4058 SM10.0KS
A4003 HFE624
C4057 SM.1uFS
C4060 SM.1uFS
+5VFE_D
-5VFE_D
OUTA
_OUTA
OUTB
_OUTB
OUTC
_OUTC
TO FE
_SCKA
_TRFE_D
_RESET
R4068 SM3.32KS
R4067 SM511.0S
A4011 SM337L
VOUT
VIN
ADJ
C4077 SM.01uFS
R4097 SM432.0S
R4092 SM243.0S
C4079 SM.1uFS
C4086 SM2.2uF-20V
C4087 SM100pFS
R4035 NORES
Q4002 NOBFT93
R4039 NORES
R4044 NORES
CR4006 BAV99
CR4007 BAV99
R4046 SM301.0S
9384-7
OPTION-01
OPTION-02
TC4000
R4047 SM1.00KS
R4076 SM154-1/oo
CR4010 BZX84-C6V2
C4047 SM.01uFS
C4044 SM100pFS
Q4003 BFG520X
Q4004 BFS50
Q4005 BFG520X
R4057 SM130.0S
R4061 SM3.32KS
R4052 SM2.00KS
C4045 SM.01uFS
C4085 NOCAPS
C4050 SM.01uFS
CR4011 NOBZX84
R4062 SM51.1S
R4069 SM619.0S
R4063 SM3.32KS
C4049 SM10pFS
A4002 SMOPA640
B=OPA640
R4099 SM0S-82P
R4100 SM0S-82P
C4036 SM.01uFS
C4046 SM.01uFS
C4037 NOCAPS
R4053 SM5.11KS
R4055 SM392.0S
R4059 SM82.5S
R4051 SM82-0603
R4150 SM332.0S
R4050 SM332.0S
R4060 SM10.0KS
R4065 SM1.74KS
R4066 SM200-11
C4098 SM12PFS
R4151 SM500-3313
R4203 SM500-3313
C4600 SM3.9PFS
R4204
OPTION-01 SM180-0603
OPTION-02 SM0.0-0603
+12VFE_D
-12VFE_D
BC(1:199)
FROM UP
PRG_D
IVGAIN_D
FROM FE
DHFE_D
BUF50_D
VOFF2_D
VOFF3_D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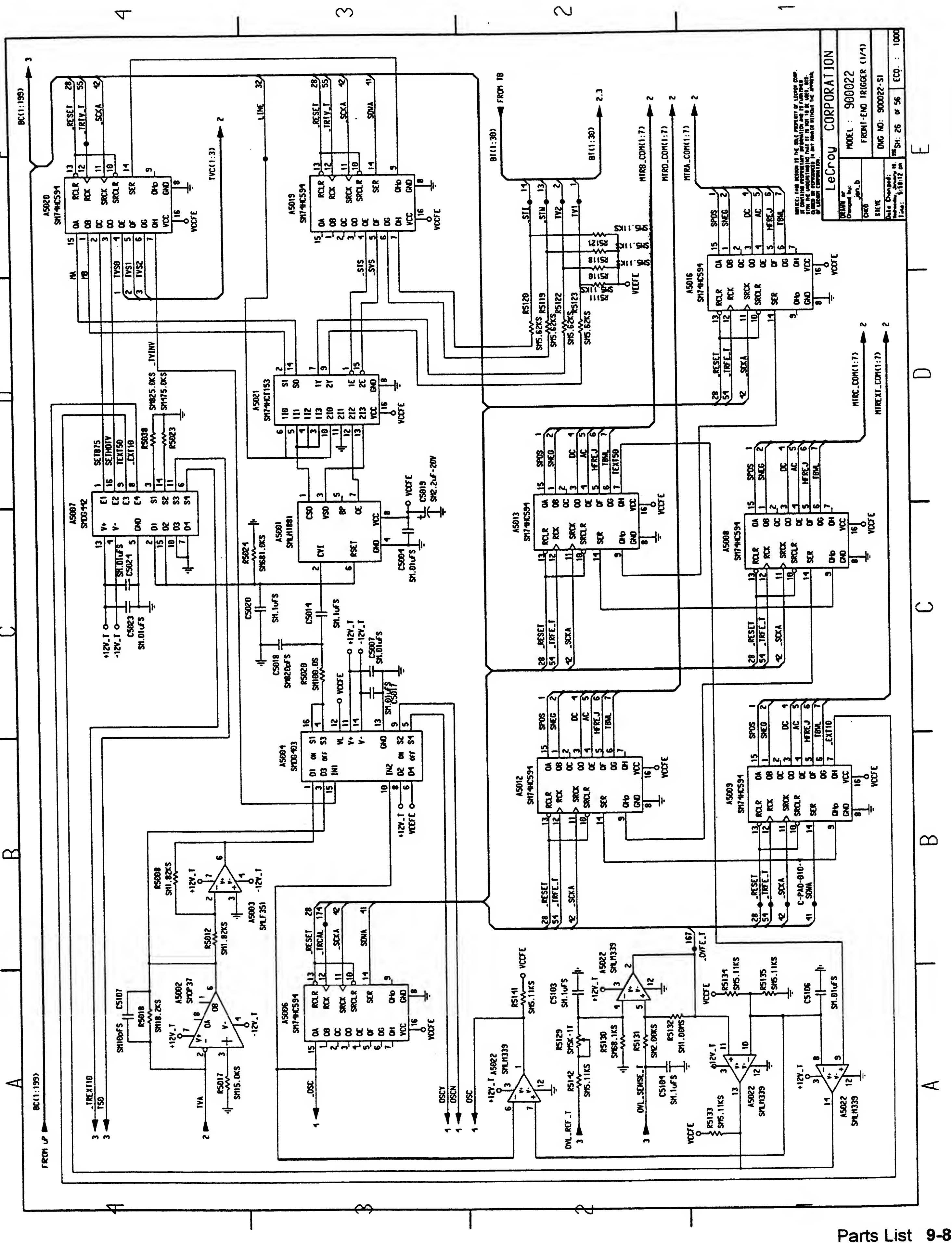
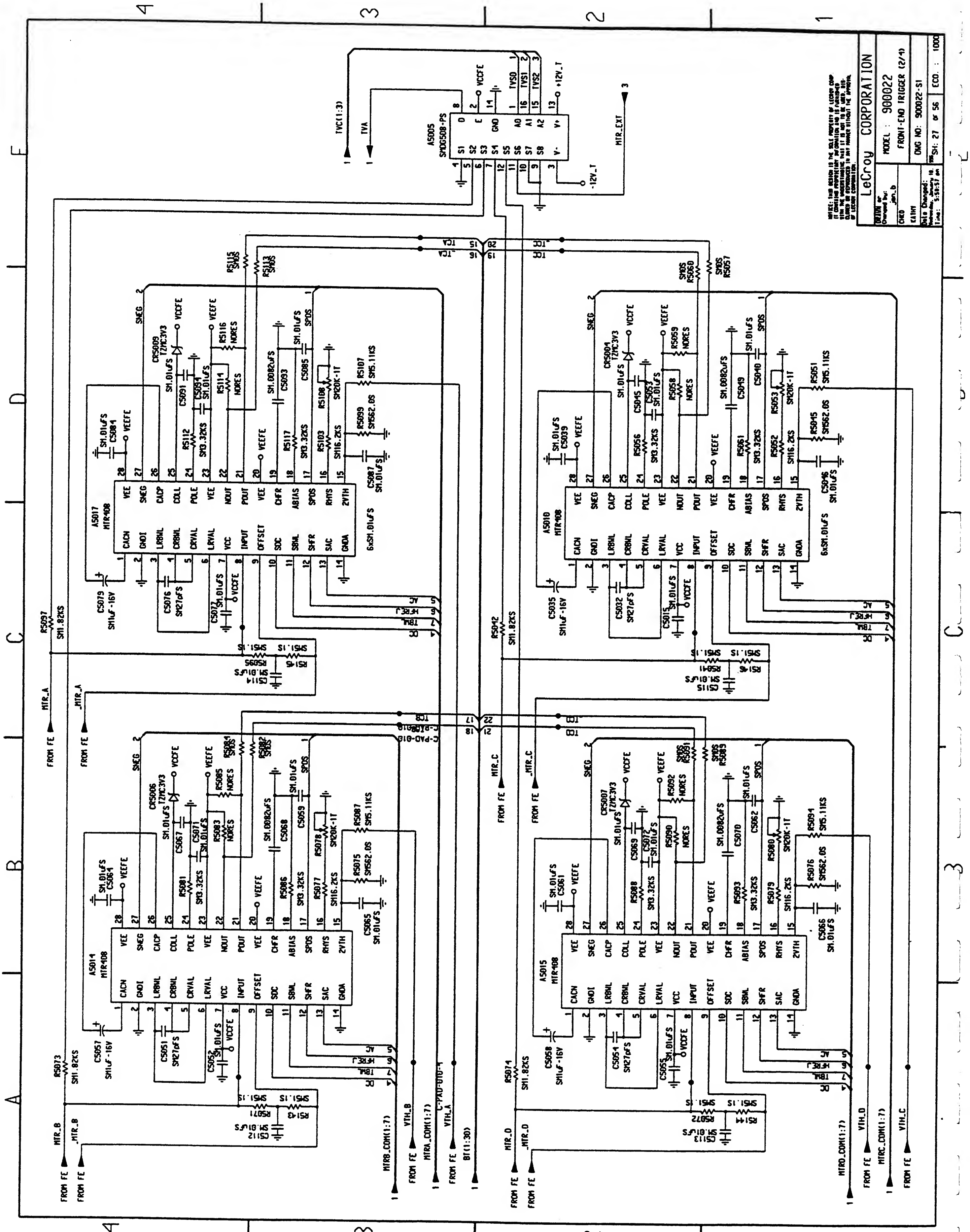
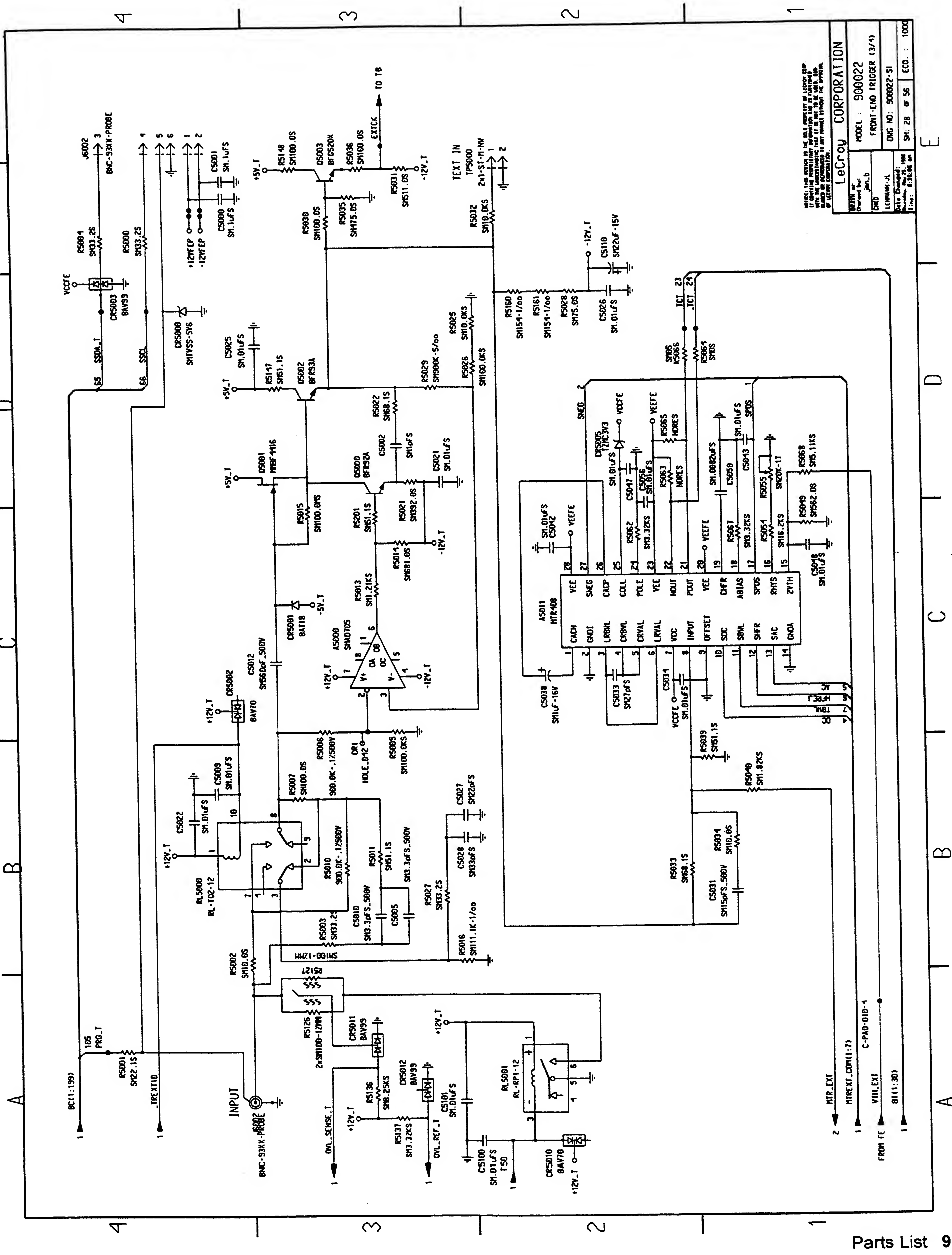
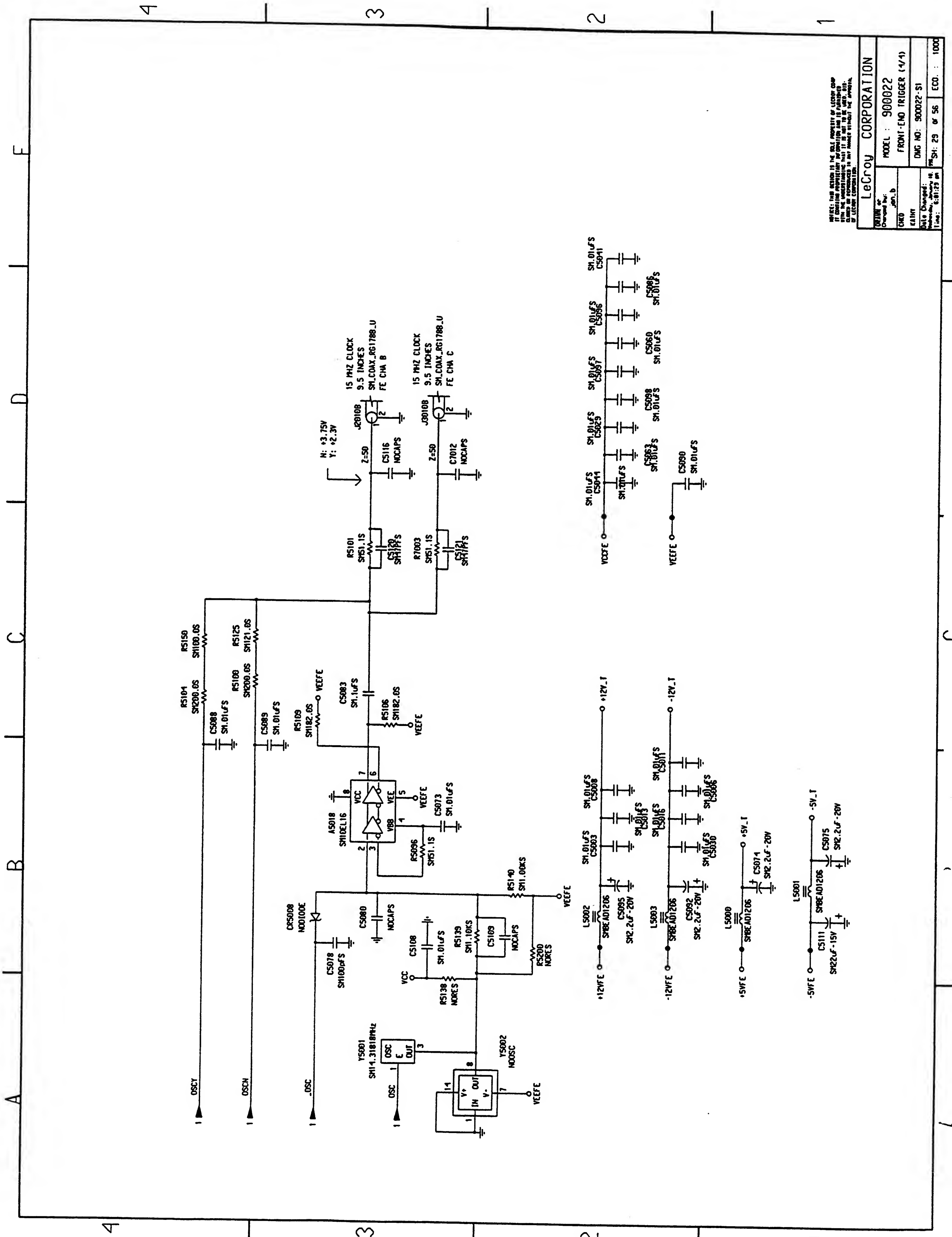
LeCroy CORPORATION
MODEL : 900022
FRONT-END CHANNEL D (4/4)
DRAWN or Changed by: jon_b
CHKD
DIDIER_L
DWG NO: 900022-S1
Date Changed: Wednesday, January 18, Time: 5:48:30 am
SH: 25 of 56
ECO. : 1000
+12RFE_D
+12VFE_D
+5VFE_D
-12VFE_D
-5VFE_D
VCCFE
C-PAD-010-3
+12VFE
+5VFE
-12VFE
-5VFE
VCCFE
L4000
L4001
L4002
L4003
L4004
SMBEAD1206
C4065
C4070
C4071
C4068
C4069
SM2.2uF-20V
C4026
C4009
C4008
C4011
C4025
C4039
C4035
C4029
C4012
C4058
C4051
C4062
C4059
C4072
C4019
C4052
C4038
C4018
SM100pFS
C4010
C4030
C4013
C4053
C4056
C4073
C4024
C4048
C4041
C4021
C4016
C4028
C4066
C4055
C4067
SM.01uFS
4
3
2
1
A
B
C
D
E
F


LeCroy CORPORATION
MODEL : 900022
FRONT-END TRIGGER (1/4)
DWG NO: 900022-S1
SH: 26 OF 56
ECO. : 1000
DRAWN or Changed by: jan_b
CHKD
STEVE
Date Changed:
Time: 5:58:12 am
A5020 SM74HC594
A5019 SM74HC594
A5021 SM74HCT153
A5007 SMDG442
A5001 SMLM1881
A5004 SMDG403
A5003 SMLF351
A5002 SMOP37
A5006 SM74HC594
A5022 SMLM339
A5013 SM74HC594
A5012 SM74HC594
A5016 SM74HC594
A5008 SM74HC594
A5009 SM74HC594
BC(1:199)
FROM uP
BT(1:30)
FROM TB
MTRB_COM(1:7)
MTRD_COM(1:7)
MTRA_COM(1:7)
MTRC_COM(1:7)
MTREXT_COM(1:7)
TVC(1:3)
LINE
_RESET
_TRTV_T
_SCKA
SDNA
_TRFE_T
_TRCAL
_TREXT10
T50
TVA
OSC
OSCY
OSCN
OVL_REF_T
OVL_SENSE_T
_OVFE_T
C-PAD-010-1
VCCFE
VEEFE
+12V_T
-12V_T


LeCroy CORPORATION
MODEL : 900022
FRONT-END TRIGGER (2/4)
DWG NO: 900022-S1
SH: 27 of 56
ECO. : 1000
A5005
SMD0508-PS
A5017
MTR408
A5010
MTR408
A5014
MTR408
A5015
MTR408
TVC(1:3)
TVA
MTR_EXT
MTR_A
_MTR_A
MTR_B
_MTR_B
MTR_C
_MTR_C
MTR_D
_MTR_D
FROM FE
MTRB_COM(1:7)
MTRA_COM(1:7)
MTRC_COM(1:7)
MTRD_COM(1:7)
VTH_A
VTH_B
VTH_C
VTH_D
BI(1:30)
VCCFE
VEEFE
+12V_T
-12V_T


LeCroy CORPORATION
MODEL: 900022
FRONT-END TRIGGER (3/4)
DWG NO: 900022-S1
SH: 28 OF 56
ECO: 1000
A5011 MTR408
A5000 SMAD705
D5000 BFR92A
D5001 MMBF4416
D5002 BFR93A
D5003 BFQ520X
RL5000 RL-TQ2-12
RL5001 RL-RP1-12
J6002 BNC-93XX-PROBE
INPUT
TEXT IN
TP5000
EXTCK
TO TB
BC(1:199)
PRG_T
TREXT10
OVL_SENSE_T
OVL_REF_T
MTR_EXT
MTREXT_COM(1:7)
VTH_EXT
C-PAD-010-1
BI(1:30)
FROM FE
SSDA_T
SSCL
+12VFEP
-12VFEP
VCCFE
VEEFE
+5V_T
+12V_T
-12V_T
-5V_T
A B C D E
1 2 3 4


LeCroy CORPORATION
MODEL : 900022
FRONT-END TRIGGER (4/4)
DWG NO: 900022-S1
SH: 29 OF 56
ECO. : 1000
DRAWN or Changed by: jan.b
CHKD KATHY
Date Changed:
Time: 6:01:29 am
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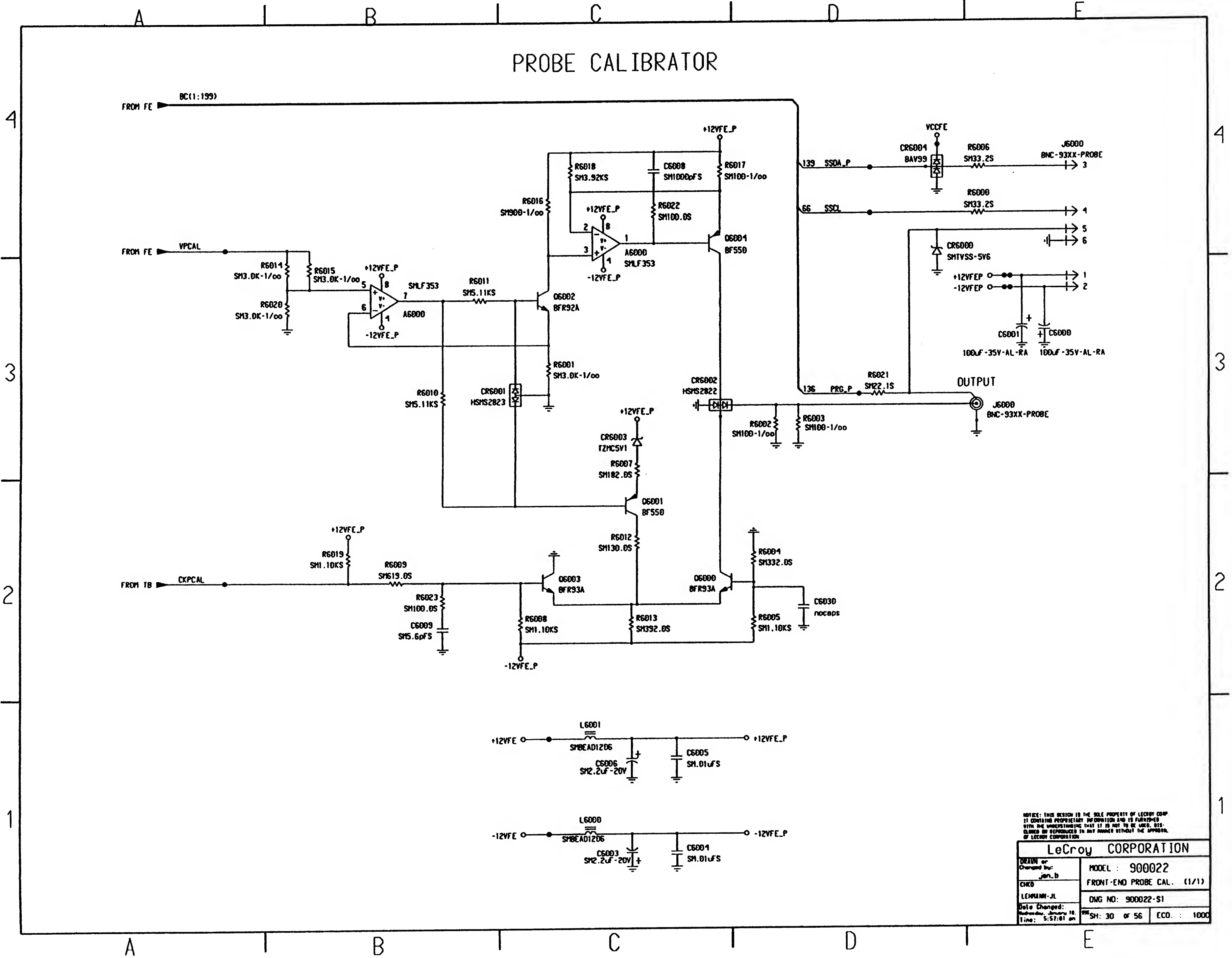
15 MHZ CLOCK
9.5 INCHES
SM.COAX_RG178B_U
FE CHA B
FE CHA C
J2010B
J3010B
N: +3.75V
Y: +2.3V
Z=50
C5116 NOCAPS
C7012 NOCAPS
R5101 SM51.1S
R7003 SM51.1S
C5120 SM1fFS
C5121 SM1fFS
R5150 SM100.0S
R5125 SM121.0S
R5104 SM200.0S
R5100 SM200.0S
C5088 SM.01uFS
C5089 SM.01uFS
R5109 SM182.0S
C5083 SM.1uFS
R5106 SM182.0S
VEEFE
A5018 SM10EL16
VCC
VEE
VBB
C5073 SM.01uFS
R5096 SM51.1S
CR5008 NODIODE
C5078 SM100pFS
C5080 NOCAPS
C5108 SM.01uFS
R5139 SM1.10KS
C5109 NOCAPS
R5140 SM1.00KS
R5200 NORES
R5138 NORES
VCC
Y5001 SM14.31818MHz
Y5002 NOOSC
OSC
OSCY
OSCN
_OSC
IN OUT V+ V-
VCCFE
VEEFE
C5041 SM.01uFS
C5086 SM.01uFS
C5056 SM.01uFS
C5060 SM.01uFS
C5097 SM.01uFS
C5098 SM.01uFS
C5029 SM.01uFS
C5063 SM.01uFS
C5044 SM.01uFS
SM.01uFS
C5090 SM.01uFS
+12V_T
-12V_T
+5V_T
-5V_T
+12VFE
-12VFE
+5VFE
-5VFE
C5003 SM.01uFS
C5008 SM.01uFS
C5013 SM.01uFS
C5016 SM.01uFS
C5011 SM.01uFS
C5006 SM.01uFS
C5030 SM.01uFS
L5002 SMBEAD1206
L5003 SMBEAD1206
L5000 SMBEAD1206
L5001 SMBEAD1206
C5095 SM2.2uF-20V
C5092 SM2.2uF-20V
C5074 SM2.2uF-20V
C5075 SM2.2uF-20V
C5111 SM22uF-15V
A B C D E
1 2 3 4


PROBE CALIBRATOR
A
B
C
D
E
4
3
2
1
FROM FE
BC(1:199)
FROM FE
VPCAL
FROM TB
CKPCAL
R6014
SM3.0K-1/oo
R6015
SM3.0K-1/oo
R6020
SM3.0K-1/oo
+12VFE_P
-12VFE_P
SMLF353
A6000
5
6
7
8
4
R6011
SM5.11KS
Q6002
BFR92A
R6016
SM900-1/oo
R6018
SM3.92KS
C6008
SM1000pFS
R6017
SM100-1/oo
R6022
SM100.0S
2
3
1
A6000
SMLF353
Q6004
BF550
R6001
SM3.0K-1/oo
R6010
SM5.11KS
CR6001
HSMS2823
CR6002
HSMS2822
CR6003
TZMC5V1
R6007
SM182.0S
Q6001
BF550
R6012
SM130.0S
R6019
SM1.10KS
R6009
SM619.0S
R6023
SM100.0S
C6009
SM5.6pFS
Q6003
BFR93A
R6008
SM1.10KS
R6013
SM392.0S
Q6000
BFR93A
R6004
SM332.0S
R6005
SM1.10KS
C6030
nocaps
139
SSDA_P
66
SSCL
136
PRG_P
VCCFE
CR6004
BAV99
R6006
SM33.2S
R6000
SM33.2S
J6000
BNC-93XX-PROBE
3
4
5
6
CR6000
SMTVSS-5V6
+12VFEP
-12VFEP
1
2
C6001
C6000
100uF-35V-AL-RA
100uF-35V-AL-RA
R6021
SM22.1S
OUTPUT
J6000
BNC-93XX-PROBE
R6002
SM100-1/oo
R6003
SM100-1/oo
+12VFE
L6001
SMBEAD1206
C6006
SM2.2uF-20V
C6005
SM.01uFS
+12VFE_P
-12VFE
L6000
SMBEAD1206
C6003
SM2.2uF-20V
C6004
SM.01uFS
-12VFE_P
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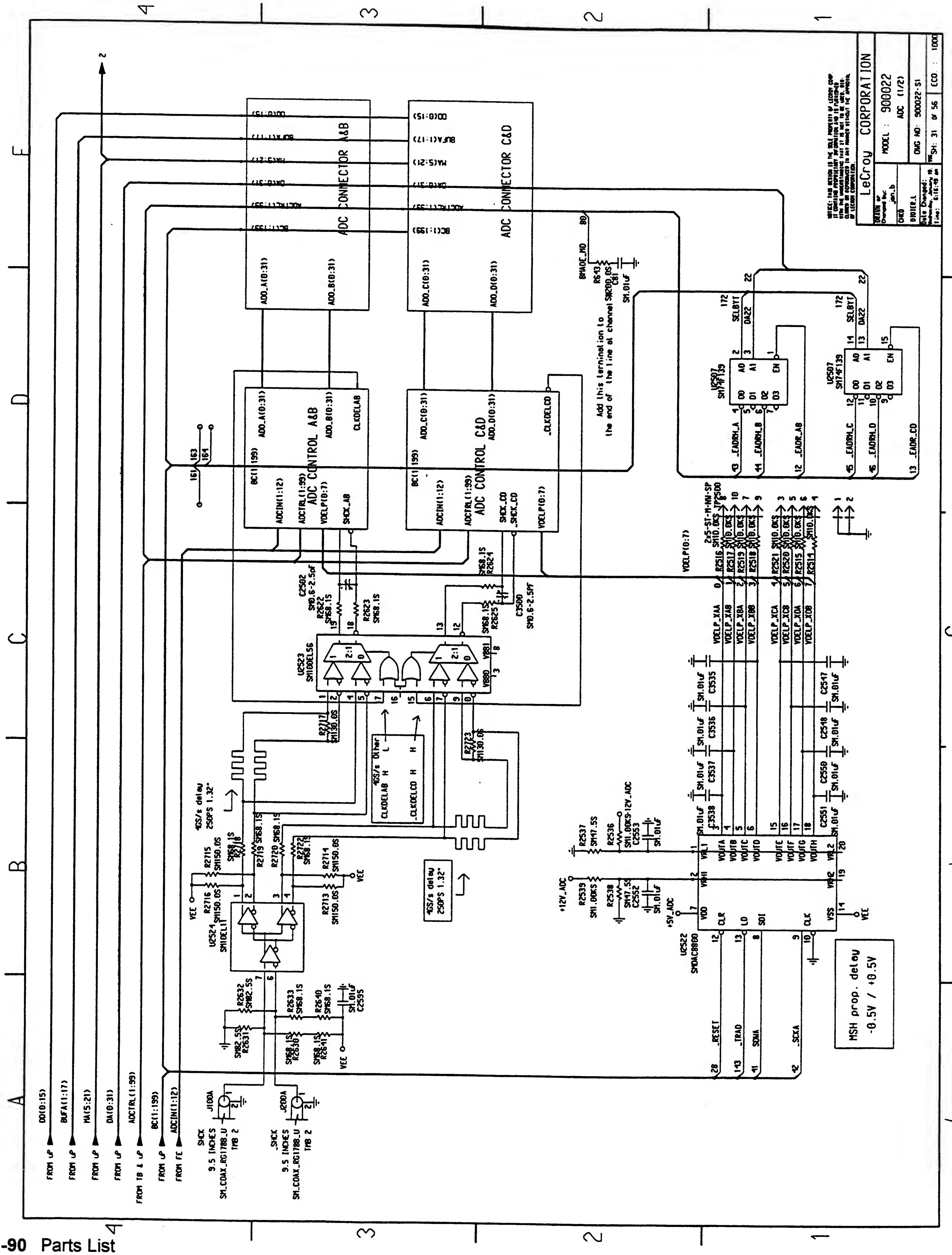
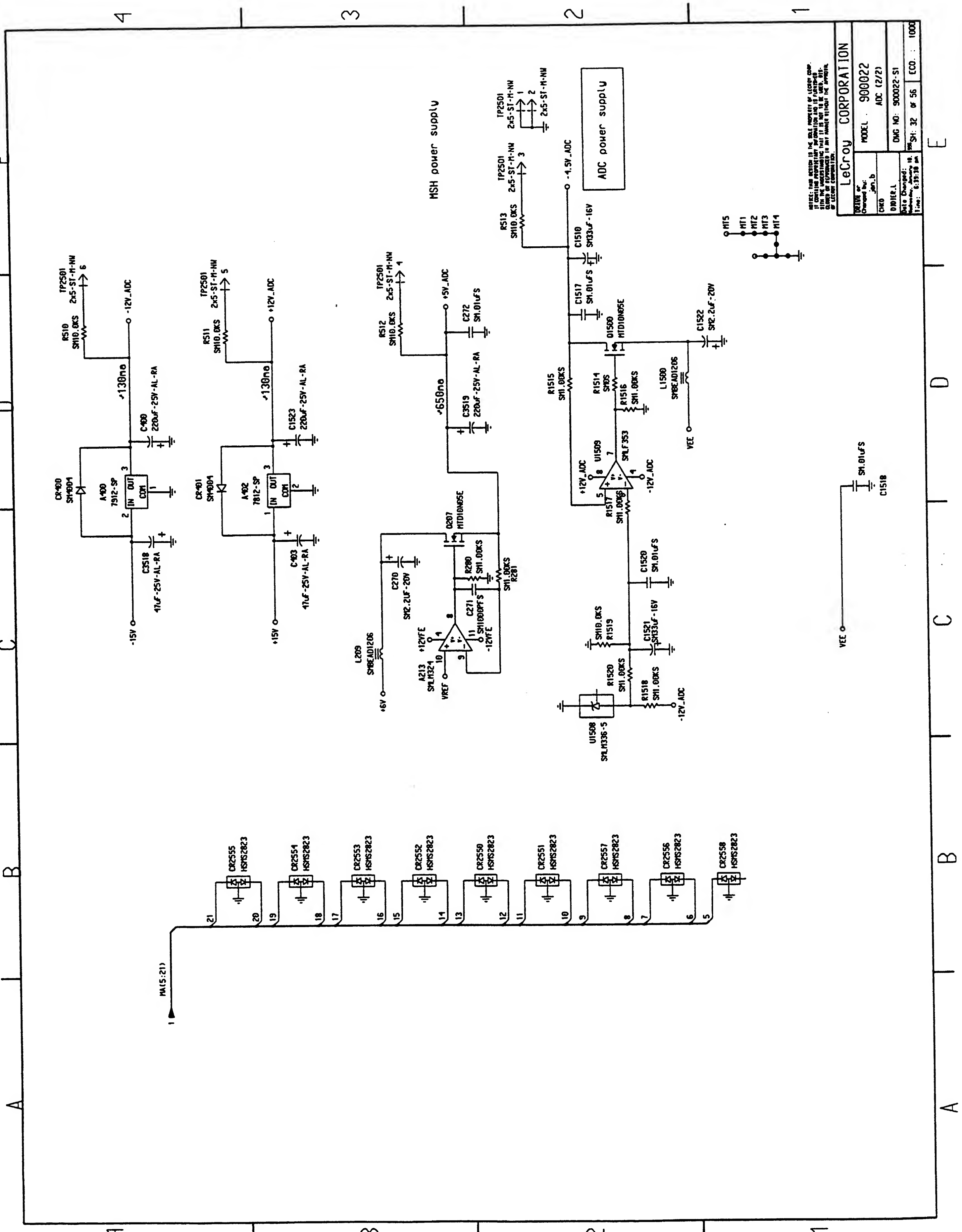
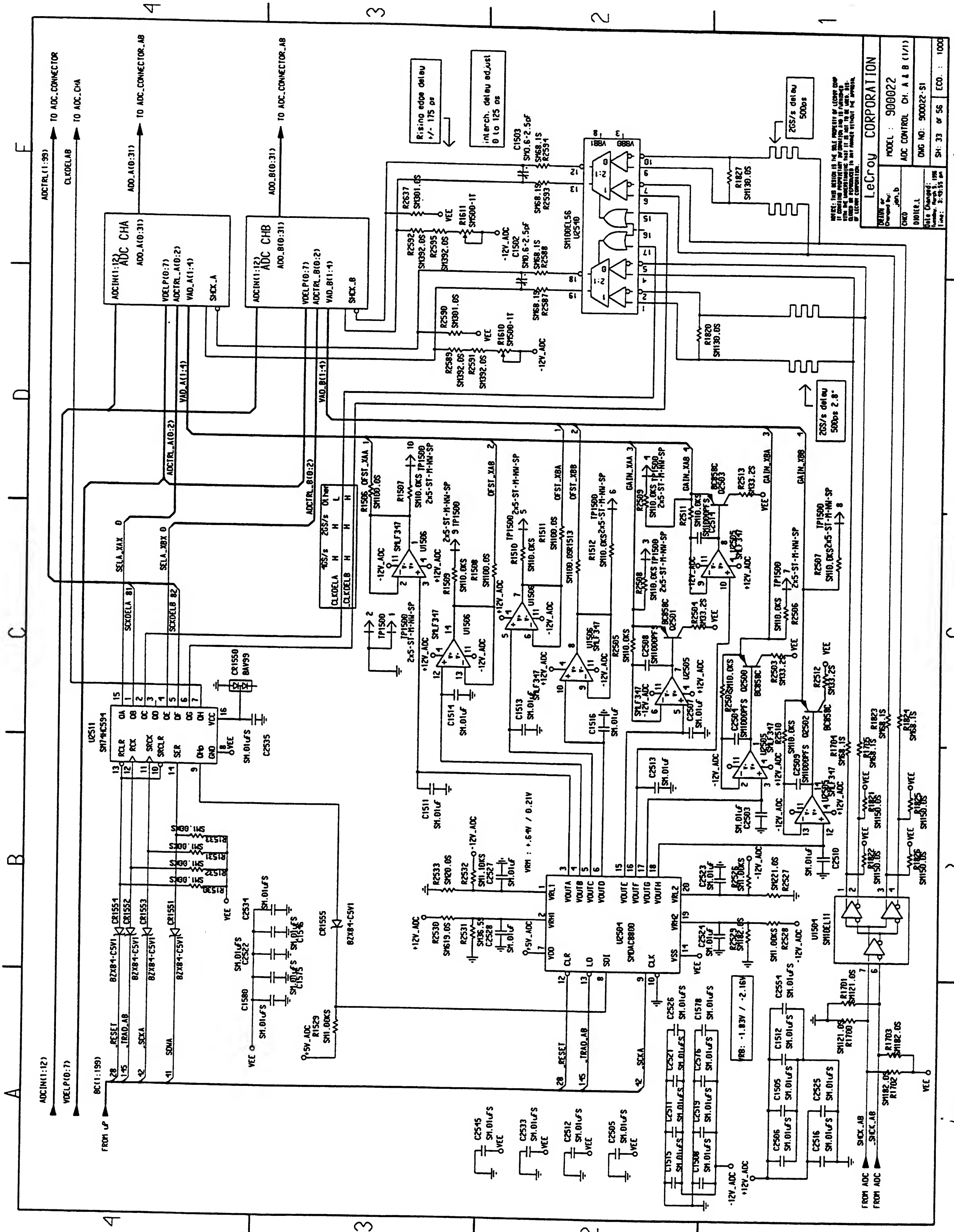
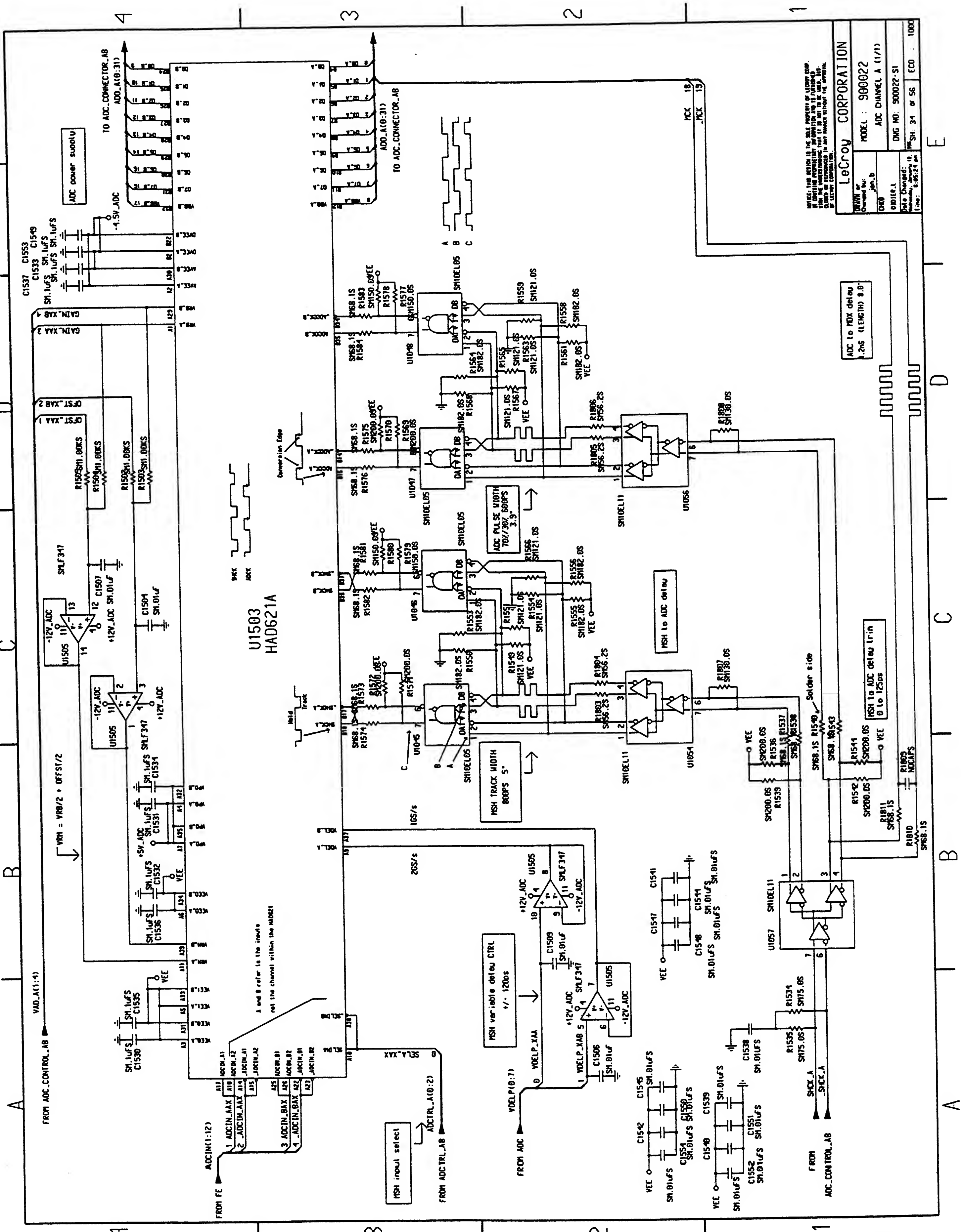
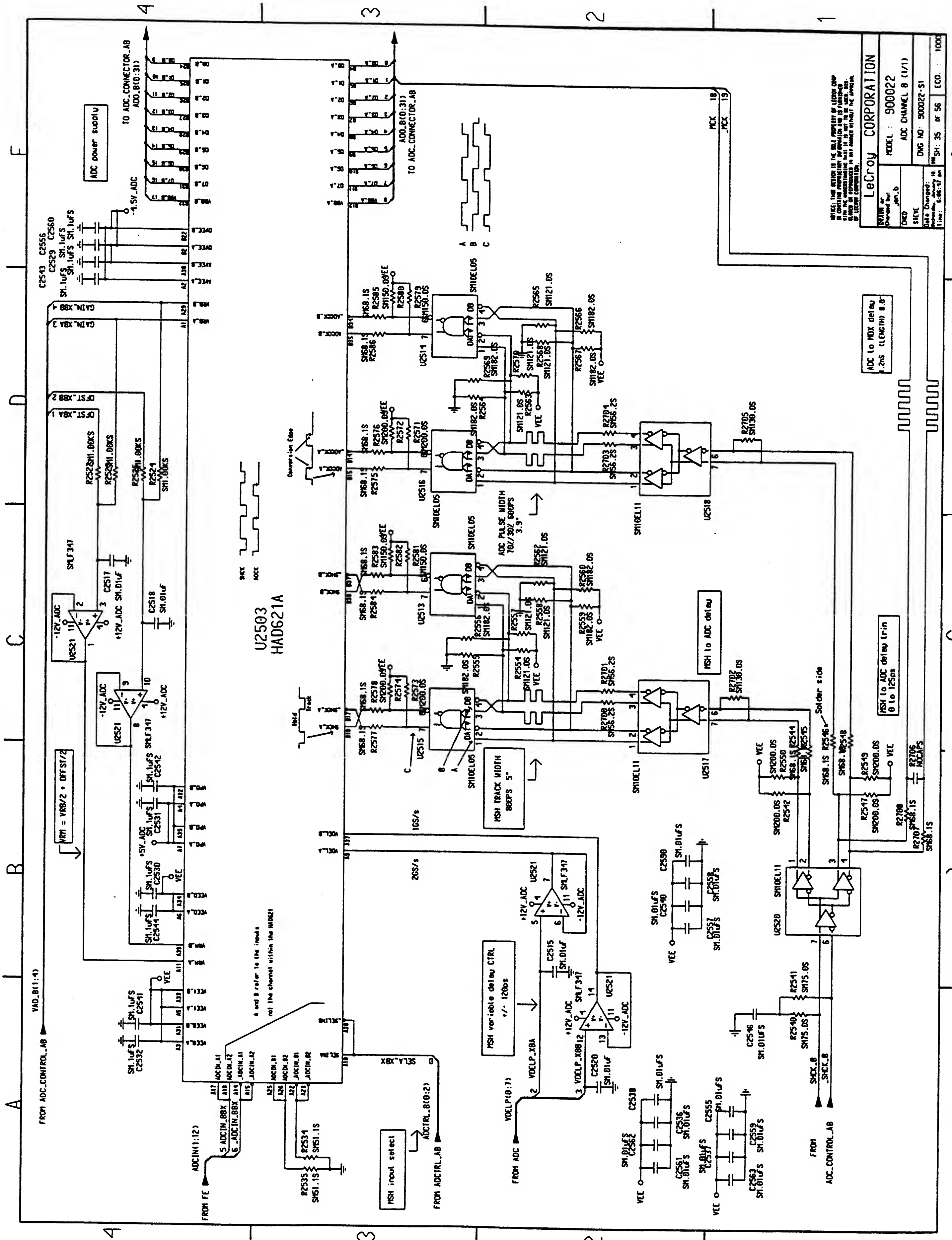
LeCroy CORPORATION
DRAWN or Changed by:
jen_b
CHKD
LEHMANN-JL
Date Changed:
Wednesday, January 10,
Time: 5:57:01 am
MODEL : 900022
FRONT-END PROBE CAL. (1/1)
DWG NO: 900022-S1
SH: 30 of 56
ECO. : 1000


LeCroy CORPORATION
MODEL : 900022
ADC (1/2)
DWG NO: 900022-S1
SH: 31 OF 56
ECO : 1000
ADC CONNECTOR A&B
ADC CONNECTOR C&D
ADC CONTROL A&B
ADC CONTROL C&D
U2523 SM100EL56
U2524 SM10EL11
U2522 SMDAC8800
U2507 SM74F139
MSH prop. delay
-0.5V / +0.5V
4GS/s delay 250PS 1.32"
Add this termination to the end of the line at channel
DD(0:15)
BUFA(1:17)
MA(5:21)
DA(0:31)
ADCTRL(1:99)
BC(1:199)
ADCIN(1:12)
FROM uP
FROM TB & uP
FROM FE
SHCK 9.5 INCHES SM_COAX_RG178B_U
J100A
J200A
VEE
+12V_ADC
+5V_ADC
VDELP(0:7)


LeCroy CORPORATION
MODEL 900022
ADC (2/2)
DWG NO: 900022-S1
SH: 32 of 56
ECO: 1000
DRAWN or Changed by: jan.b
CHKD DIDIER.L
ADC power supply
MSH power supply
TP2501 2x5-ST-M-NW
R510 SM10.0KS
R511 SM10.0KS
R512 SM10.0KS
R513 SM10.0KS
-12V_ADC
+12V_ADC
+5V_ADC
-4.5V_ADC
~130ma
~130ma
~650ma
C400 220uF-25V-AL-RA
C1523 220uF-25V-AL-RA
C3519 220uF-25V-AL-RA
C3518 47uF-25V-AL-RA
C403 47uF-25V-AL-RA
CR400 SM4004
CR401 SM4004
A400 7912-SP
A402 7812-SP
IN OUT COM
-15V
+15V
C272 SM.01uFS
Q207 MTD10N05E
R280 SM1.00KS
R281 SM1.00KS
C270 SM2.2uF-20V
C271 SM1000PFS
A213 SMLM324
+12VFE
-12VFE
VREF
L209 SMBEAD1206
+6V
C1510 SM33uF-16V
C1517 SM.01uFS
Q1500 MTD10N05E
C1522 SM2.2uF-20V
R1515 SM1.00KS
R1514 SM0S
R1516 SM1.00KS
L1500 SMBEAD1206
VEE
U1509 SMLF353
R1517 SM1.00KS
C1520 SM.01uFS
C1521 SM33uF-16V
R1519 SM10.0KS
R1520 SM1.00KS
R1518 SM1.00KS
U1508 SMLM336-5
C1518 SM.01uFS
MT5 MT1 MT2 MT3 MT4
CR2555 HSMS2823
CR2554 HSMS2823
CR2553 HSMS2823
CR2552 HSMS2823
CR2550 HSMS2823
CR2551 HSMS2823
CR2557 HSMS2823
CR2556 HSMS2823
CR2558 HSMS2823
MA(5:21)
A B C D E
1 2 3 4


LeCroy CORPORATION
MODEL : 900022
ADC CONTROL CH. A & B (1/1)
DWG NO: 90022-S1
SH: 33 of 56
ECO. : 1000
Rising edge delay +/- 175 ps
interch. delay adjust 0 to 125 ps
2GS/s delay 500ps
2GS/s delay 500ps 2.8"
ADC CHA
ADC CHB
TO ADC_CONNECTOR
TO ADC_CHA
TO ADC_CONNECTOR_AB
FROM uP
FROM ADC
U2511 SM74HC594
U2504 SMDAC8800
U2540 SM100EL56
U1504 SM10EL11
VRM : +.6V / 0.21V
VRB: -1.83V / -2.16V


U1503
HAD621A
TO ADC_CONNECTOR_AB
ADD_A(0:31)
ADC power supply
VRM = VRB/2 + OFFST/2
GAIN_XAA 3
GAIN_XAB 4
OFST_XAA 1
OFST_XAB 2
-4.5V_ADC
+5V_ADC
+12V_ADC
-12V_ADC
VEE
A and B refer to the inputs not the channel within the HAD621
FROM FE
ADCIN(1:12)
1 ADCIN_AAX
2 _ADCIN_AAX
3 ADCIN_BAX
4 _ADCIN_BAX
MSH input select
FROM ADCTRL_AB
ADCTRL_A(0:2)
SELA_XAX
FROM ADC
VDELP(0:7)
VDELP_XAA
VDELP_XAB
MSH variable delay CTRL +/- 120ps
FROM ADC_CONTROL_AB
VAD_A(1:4)
1GS/s
2GS/s
SHCK
ADCK
Conversion Edge
Hold
Track
MSH TRACK WIDTH 800PS 5°
ADC PULSE WIDTH 70%/30% 600PS 3.9°
MSH to ADC delay
MSH to ADC delay trim 0 to 125ps
ADC to MDX delay 1.2nS (LENGTH) 8.0"
Solder side
SHCK_A
_SHCK_A
MCK 18
_MCK 19
U1045
U1046
U1047
U1048
U1054
U1056
U1057
U1505
SM10EL05
SM10EL11
SMLF347
LeCroy CORPORATION
MODEL : 900022
ADC CHANNEL A (1/1)
DWG NO: 900022-S1
SH: 34 of 56
ECO : 1000
A
B
C
D
E
1
2
3
4


LeCroy CORPORATION
MODEL : 900022
ADC CHANNEL B (1/1)
DWG NO: 900022-S1
SH: 35 OF 56
ECO. : 1000
DRAWN or Changed by: jon_b
CHKD STEVE
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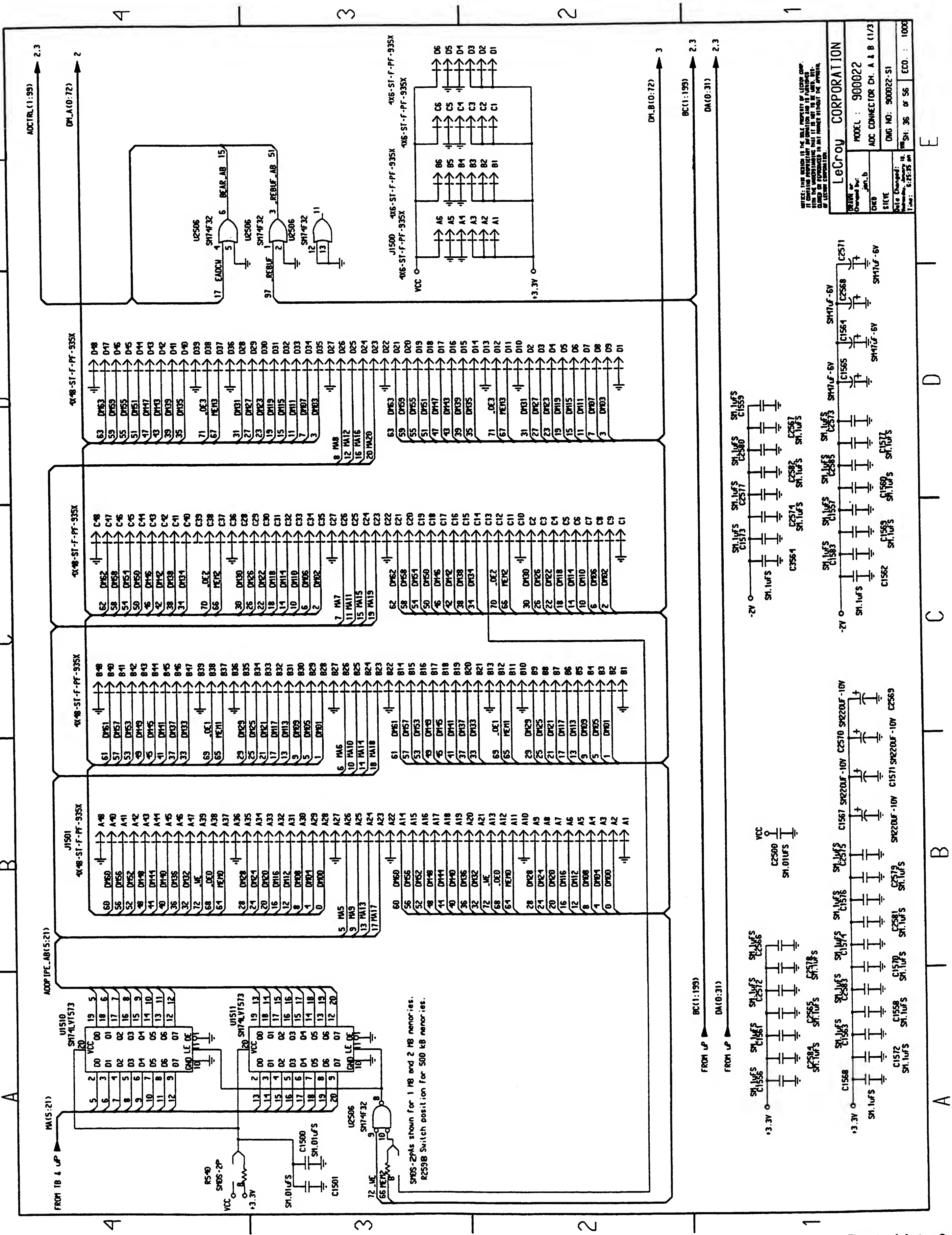
U2503
HAD621A
ADC power supply
TO ADC_CONNECTOR_AB
ADO_B(0:31)
-4.5V_ADC
GAIN_XBA 3
GAIN_XBB 4
OFST_XBA 1
OFST_XBB 2
VRM = VRB/2 + OFFST/2
U2521
SMLF347
+12V_ADC
-12V_ADC
+5V_ADC
VEE
VAD_B(1:4)
FROM ADC_CONTROL_AB
ADCIN(1:2)
5 ADCIN_BBX
6 ADCIN_BBX
FROM FE
MSH input select
ADCTRL_B(0:2)
FROM ADCTRL_AB
SELA_XBX
VDELP(0:7)
2 VDELP_XBA
3 VDELP_XBB
FROM ADC
MSH variable delay CTRL +/- 120ps
A and B refer to the inputs not the channel within the HAD621
1GS/s
2GS/s
SHCK
ADCK
Conversion Edge
Hold
Track
MSH TRACK WIDTH 800PS 5"
ADC PULSE WIDTH 70/30/ 600PS 3.9"
MSH to ADC delay
MSH to ADC delay trim 0 to 125ps
ADC to MDX delay 1.2nS (LENGTH) 8.0"
Solder side
U2513
U2514
U2515
U2516
U2517
U2518
U2520
SM10EL05
SM10EL11
MCK 18
_MCK 19
SHCK_B
_SHCK_B
FROM ADC_CONTROL_AB
A
B
C
1
2
3
4
5


LeCroy CORPORATION
MODEL : 900022
ADC CONNECTOR CH. A & B (1/3
DWG NO: 900022-S1
SH: 36 OF 56
ECO. : 1000
DRAWN or Changed by: jan_b
CHKD
STEVE
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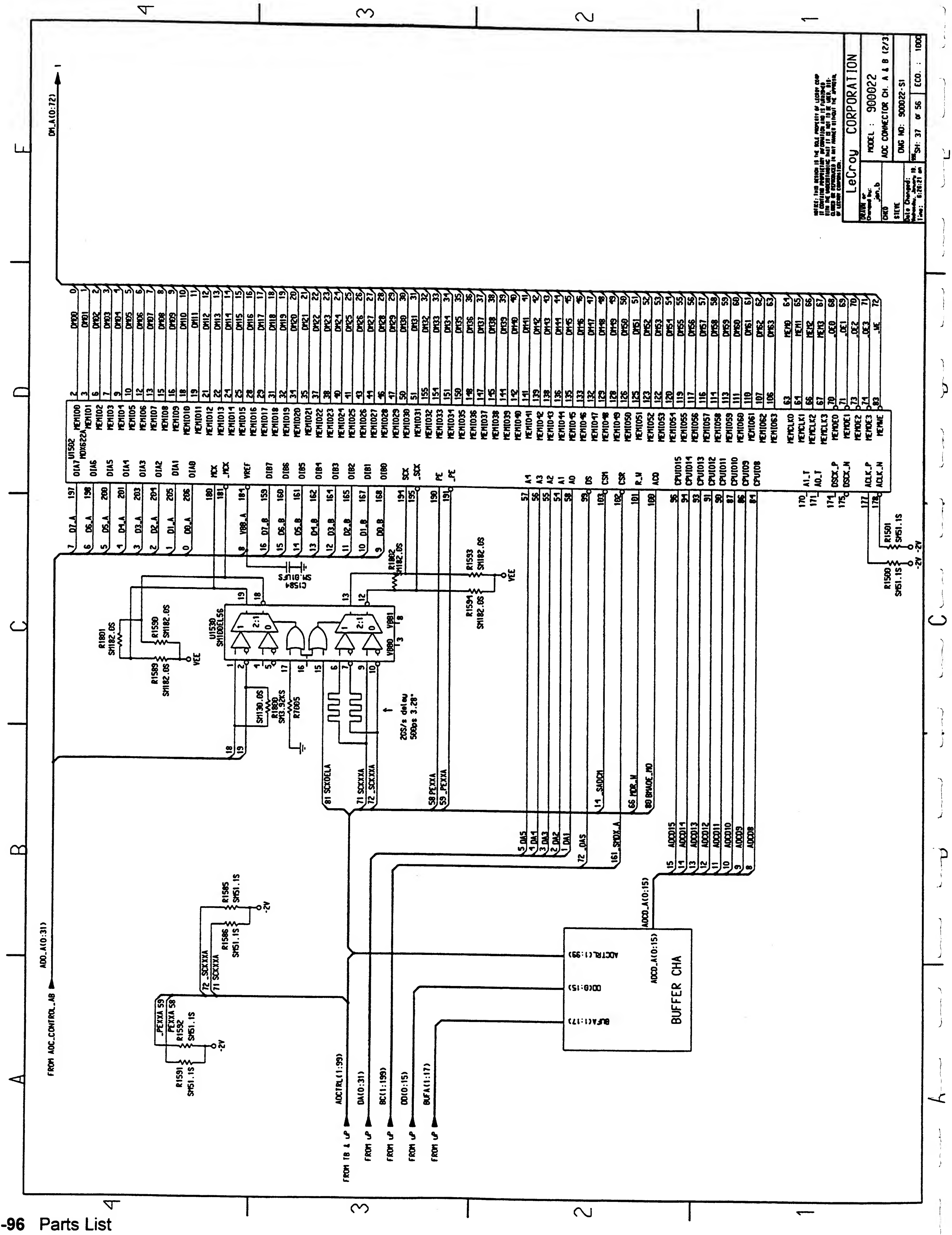
J1500 4X6-ST-F-PF-935X
J1501 4X48-ST-F-PF-935X
U1510 SM74LVT573
U1511 SM74LVT573
U2506 SM74F32
ADCTRL(1:99)
DM_A(0:72)
DM_B(0:72)
BC(1:199)
DA(0:31)
MA(5:21)
ADDPIPE_AB(5:21)
FROM TB & uP
FROM uP
BEAR_AB
REBUF_AB
EADCN
REBUF
R540 SMDS-2P
SPDS-2PAs shown for 1 MB and 2 MB memories. R2598 Switch position for 500 kB memories.
VCC
+3.3V
-2V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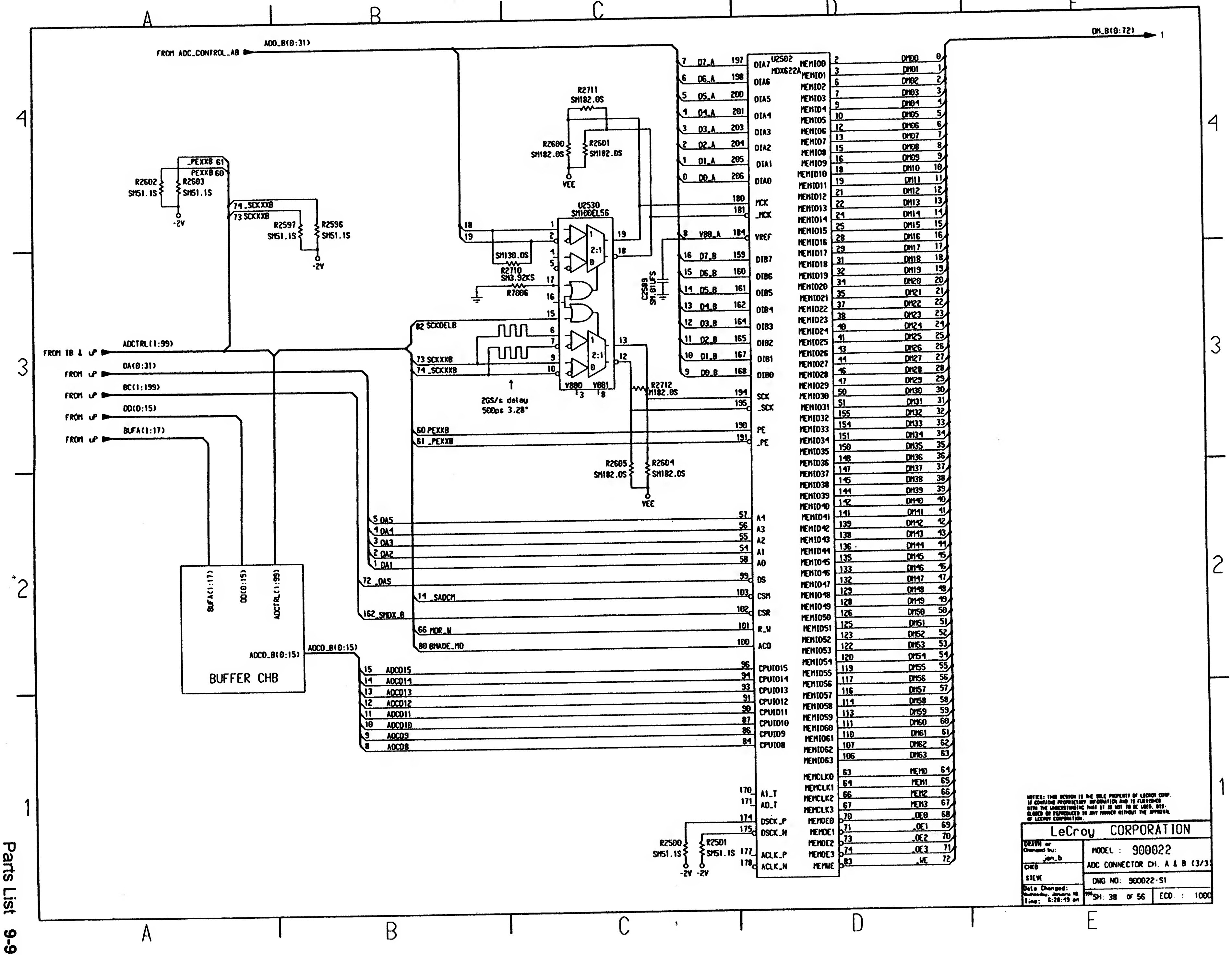
LeCroy CORPORATION
DRAWN or Owned by: jon_b
CHKD
STEVE
Date Changed:
Time: 6:26:21 am
MODEL : 900022
ADC CONNECTOR CH. A & B (2/3)
DWG NO: 900022-S1
SH: 37 of 56
ECO. : 1000
DM_A(0:72)
U1502
MDX622A
U1530
SH100EL56
2:1
VBB0
VBB1
C1584
SM.01UFS
R1801
SM182.0S
R1590
SM182.0S
R1589
SM182.0S
R1593
SM182.0S
R1594
SM182.0S
R1802
SM182.0S
R1800
SM3.92KS
SM130.0S
R7805
R1500
SM51.1S
R1501
SM51.1S
R1585
SM51.1S
R1586
SM51.1S
R1591
SM51.1S
R1592
SM51.1S
VEE
-2V
2GS/s delay
500ps 3.28"
MCX
_MCX
VREF
SCX
_SCX
PE
_PE
A4
A3
A2
A1
A0
DS
CSM
CSR
R_W
ACO
ALT
AO_T
DSCK_P
DSCK_N
ACLK_P
ACLK_N
MEMCLK0
MEMCLK1
MEMCLK2
MEMCLK3
MEMOE0
MEMOE1
MEMOE2
MEMOE3
MEMWE
81 SCKDELA
71 SCKXXA
72 _SCKXXA
58 PEXXA
59 _PEXXA
14 _SADCM
66 MDR_W
80 BMADE_MD
5 DAS
4 DA1
3 DA3
2 DA2
1 DA1
72 _DAS
161 SMDX_A
ADCD15
ADCD14
ADCD13
ADCD12
ADCD11
ADCD10
ADCD9
ADCD8
CPUID15
CPUID14
CPUID13
CPUID12
CPUID11
CPUID10
CPUID9
CPUID8
ADCD_A(0:15)
BUFFER CHA
ACTRL(1:99)
DD(0:15)
BUFA(1:17)
ADO_A(0:31)
FROM ADC_CONTROL_AB
ACTRL(1:99)
DA(0:31)
BC(1:199)
DD(0:15)
BUFA(1:17)
FROM TB & uP
FROM uP
FROM uP
FROM uP
FROM uP
A
B
C
D
E
1
2
3
4


FROM ADC_CONTROL_AB
ADO_B(0:31)
DM_B(0:72)
FROM TB & uP
ADCTRL(1:99)
FROM uP
OA(0:31)
FROM uP
BC(1:199)
FROM uP
DD(0:15)
FROM uP
BUFA(1:17)
BUFFER CHB
BUFA(1:17)
DD(0:15)
ADCTRL(1:99)
ADCO_B(0:15)
U2502
MDX622A
U2530
SM100EL56
2:1
V880
V881
2GS/s delay 500ps 3.28"
R2711 SM182.0S
R2600 SM182.0S
R2601 SM182.0S
VEE
R2602 SM51.1S
R2603 SM51.1S
_PEXXB 61
PEXXB 60
-2V
74 _SCXXB
73 SCXXB
R2597 SM51.1S
R2596 SM51.1S
SM130.0S
R2710 SM3.92KS
R7006
C2589 SM.01UFS
R2712 SM182.0S
R2605 SM182.0S
R2604 SM182.0S
82 SCKDELB
73 SCXXB
74 _SCXXB
60 PEXXB
61 _PEXXB
5 DA5
4 DA4
3 DA3
2 DA2
1 DA1
72 _DAS
14 _SADCM
162 _SMDX_B
66 MDR_W
80 BMADE_MD
15 ADCO15
14 ADCO14
13 ADCO13
12 ADCO12
11 ADCO11
10 ADCO10
9 ADCO9
8 ADCO8
DIA7 … DIA0
DIB7 … DIB0
MCK
_MCK
VREF
SCK
_SCK
PE
_PE
A4 A3 A2 A1 A0
DS
CSM
CSR
R_W
ACO
CPUIO15 … CPUIO8
A1_T
A0_T
DSCK_P
DSCK_N
ACLK_P
ACLK_N
R2500 SM51.1S
R2501 SM51.1S
MEMIO0 … MEMIO63
MEMCLK0 MEMCLK1 MEMCLK2 MEMCLK3
MEMOE0 MEMOE1 MEMOE2 MEMOE3
MEMWE
DM00 … DM63
MEM0 MEM1 MEM2 MEM3
_OE0 _OE1 _OE2 _OE3
_WE
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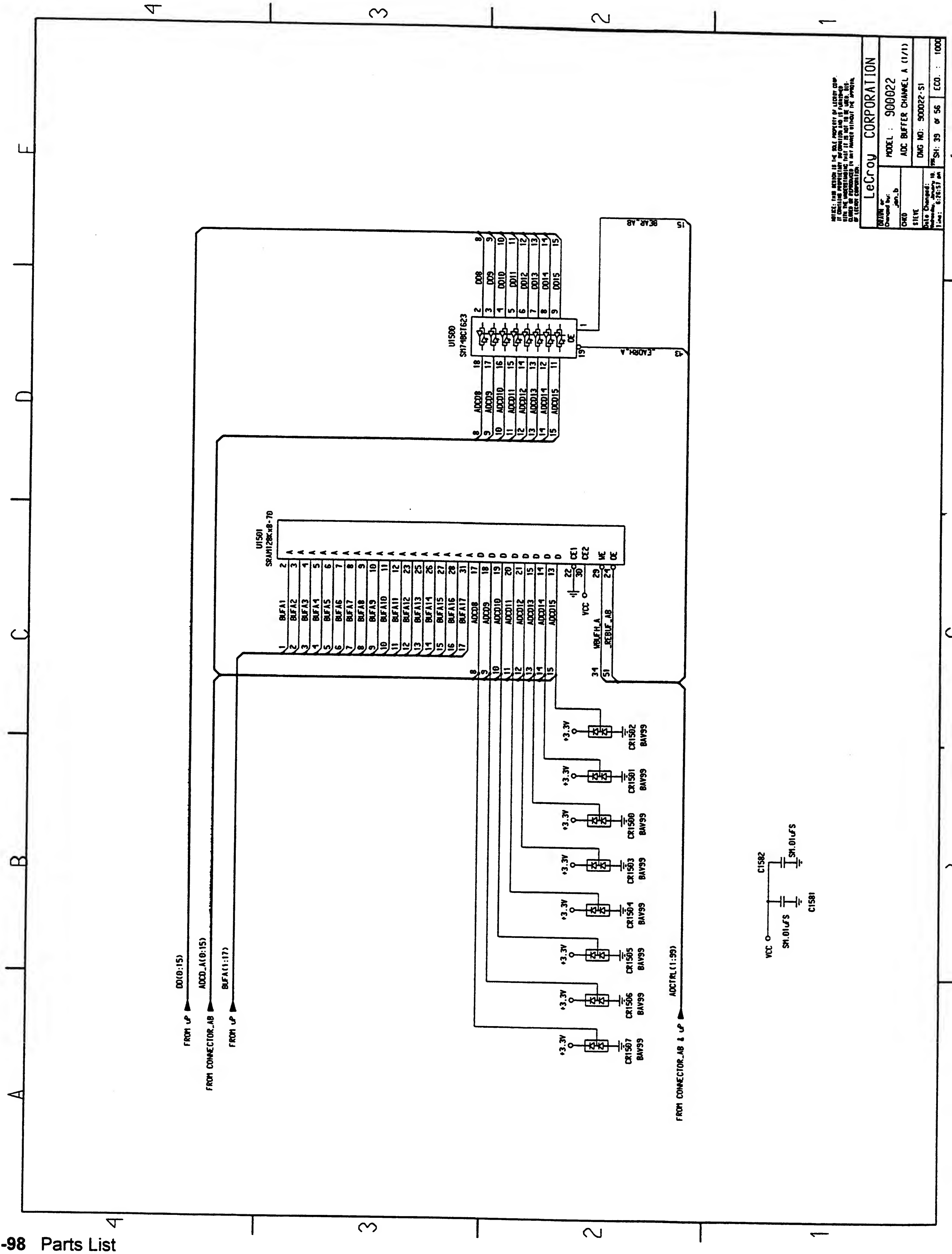
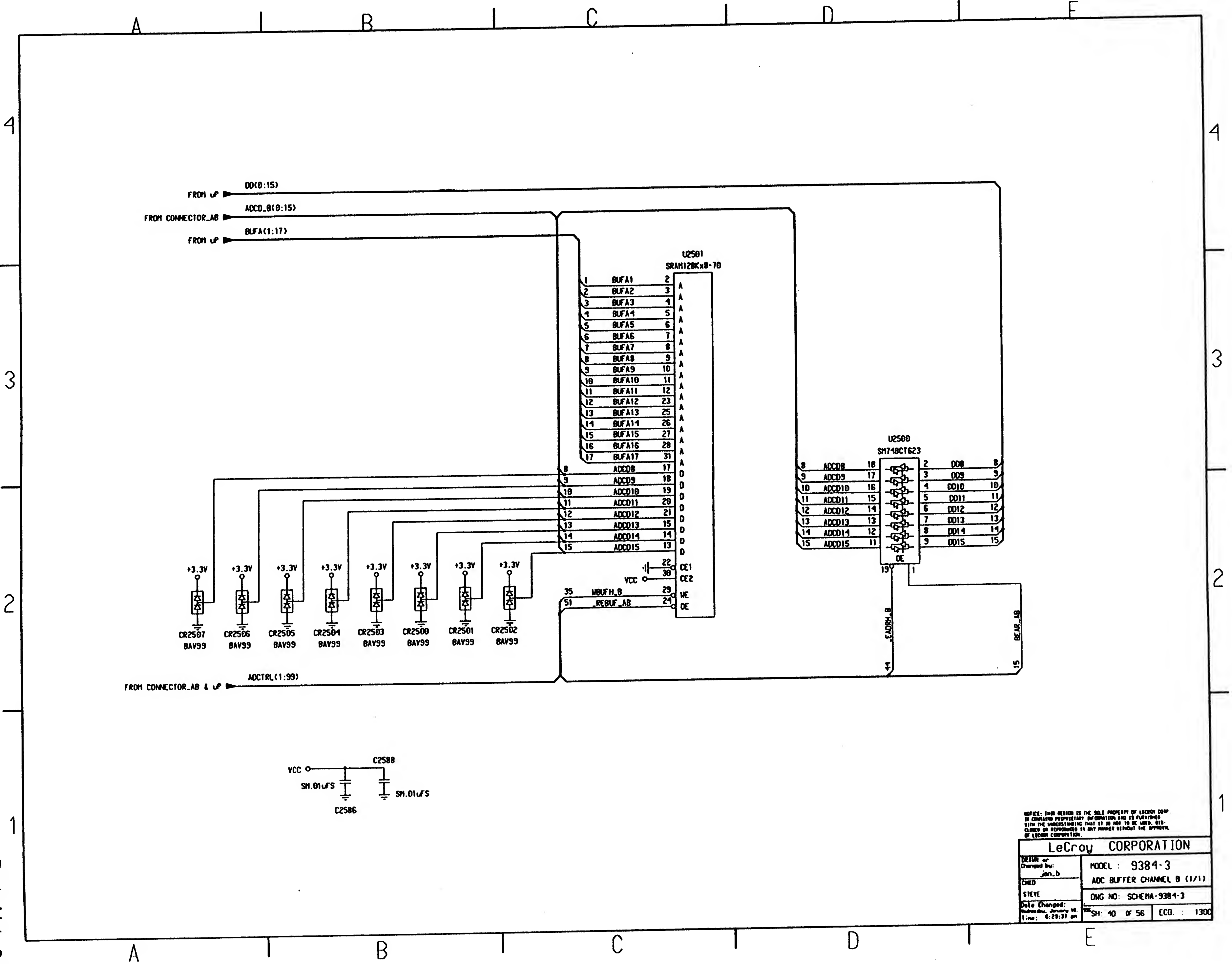
LeCroy CORPORATION
DRAWN or Changed by: jen_b
CHKD STEVE
Date Changed: Wednesday, January 18, 1995 Time: 6:28:49 am
MODEL : 900022
ADC CONNECTOR CH. A & B (3/3)
DWG NO: 900022-S1
SH: 38 OF 56
ECO. : 1000
A B C D E
1 2 3 4


LeCroy CORPORATION
MODEL : 900022
ADC BUFFER CHANNEL A (1/1)
DWG NO: 900022-S1
SH: 39 of 56
ECO: 1000
DRAWN or Changed by: jen_b
CHKD
STEVE
U1500
SM74BCT623
OE
U1501
SRAM128Kx8-70
CE1
CE2
WE
OE
VCC
WBUFH_A
_RCBUF_AB
_EAORH_A
BEAR_AB
ADCD8
ADCD9
ADCD10
ADCD11
ADCD12
ADCD13
ADCD14
ADCD15
DD8
DD9
DD10
DD11
DD12
DD13
DD14
DD15
BUFA1
BUFA17
+3.3V
CR1500
CR1501
CR1502
CR1503
CR1504
CR1505
CR1506
CR1507
BAV99
C1581
C1582
SM.01uFS
DD(0:15)
ADCD_A(0:15)
BUFA(1:17)
ADCTRL(1:99)
FROM uP
FROM CONNECTOR_AB
FROM uP
FROM CONNECTOR_AB & uP
A
B
C
D
E
1
2
3
4


FROM uP
DD(0:15)
FROM CONNECTOR_AB
ADCD_B(0:15)
FROM uP
BUFA(1:17)
U2501
SRAM128Kx8-70
BUFA1
BUFA2
BUFA3
BUFA4
BUFA5
BUFA6
BUFA7
BUFA8
BUFA9
BUFA10
BUFA11
BUFA12
BUFA13
BUFA14
BUFA15
BUFA16
BUFA17
ADCD8
ADCD9
ADCD10
ADCD11
ADCD12
ADCD13
ADCD14
ADCD15
CE1
CE2
VCC
WE
OE
WBUFH_B
_REBUF_AB
U2500
SM74BCT623
DD8
DD9
DD10
DD11
DD12
DD13
DD14
DD15
_EADRH_B
BEAR_AB
+3.3V
CR2507 BAV99
CR2506 BAV99
CR2505 BAV99
CR2504 BAV99
CR2503 BAV99
CR2500 BAV99
CR2501 BAV99
CR2502 BAV99
FROM CONNECTOR_AB & uP
ADCTRL(1:99)
VCC
C2588
SM.01uFS
SM.01uFS
C2586
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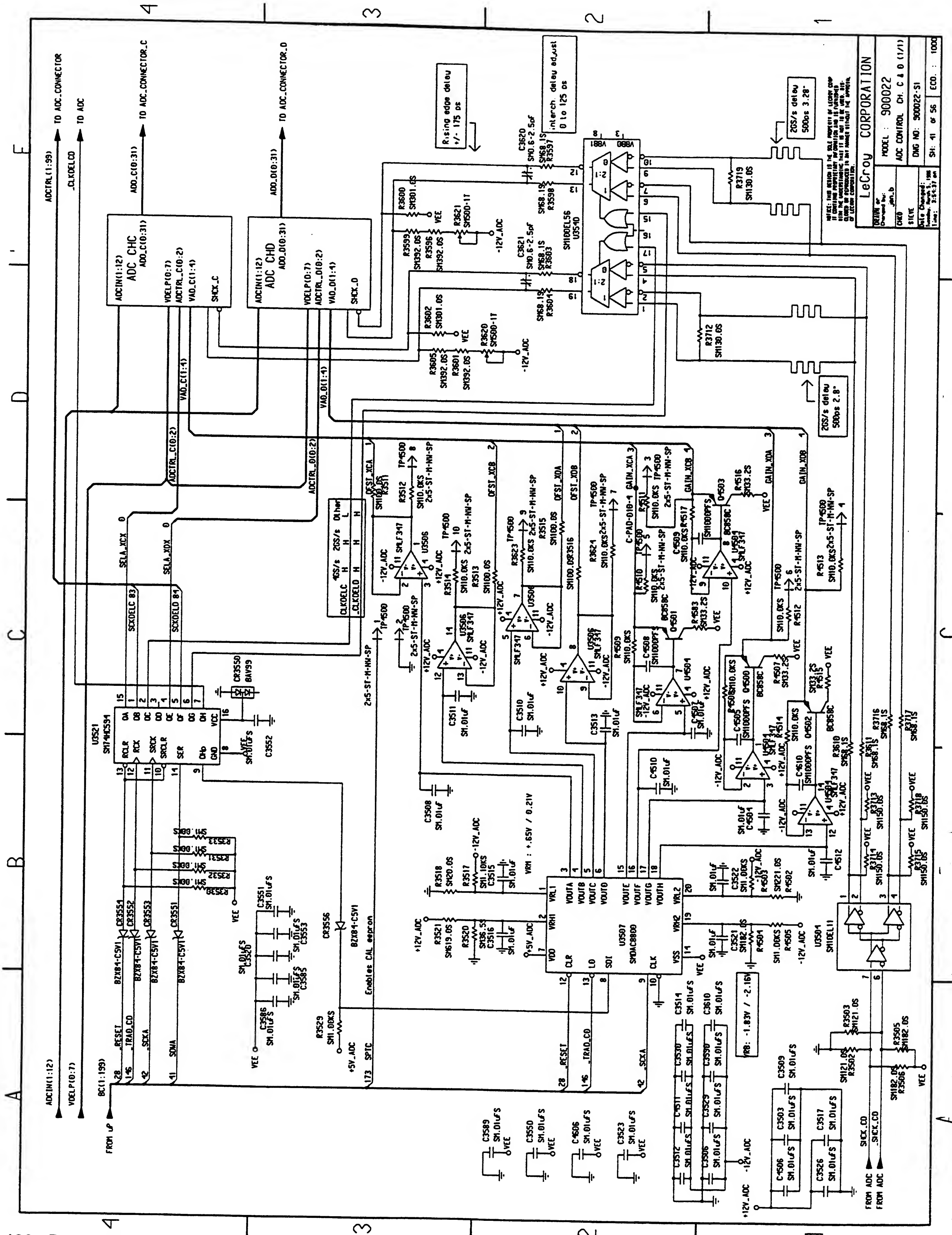
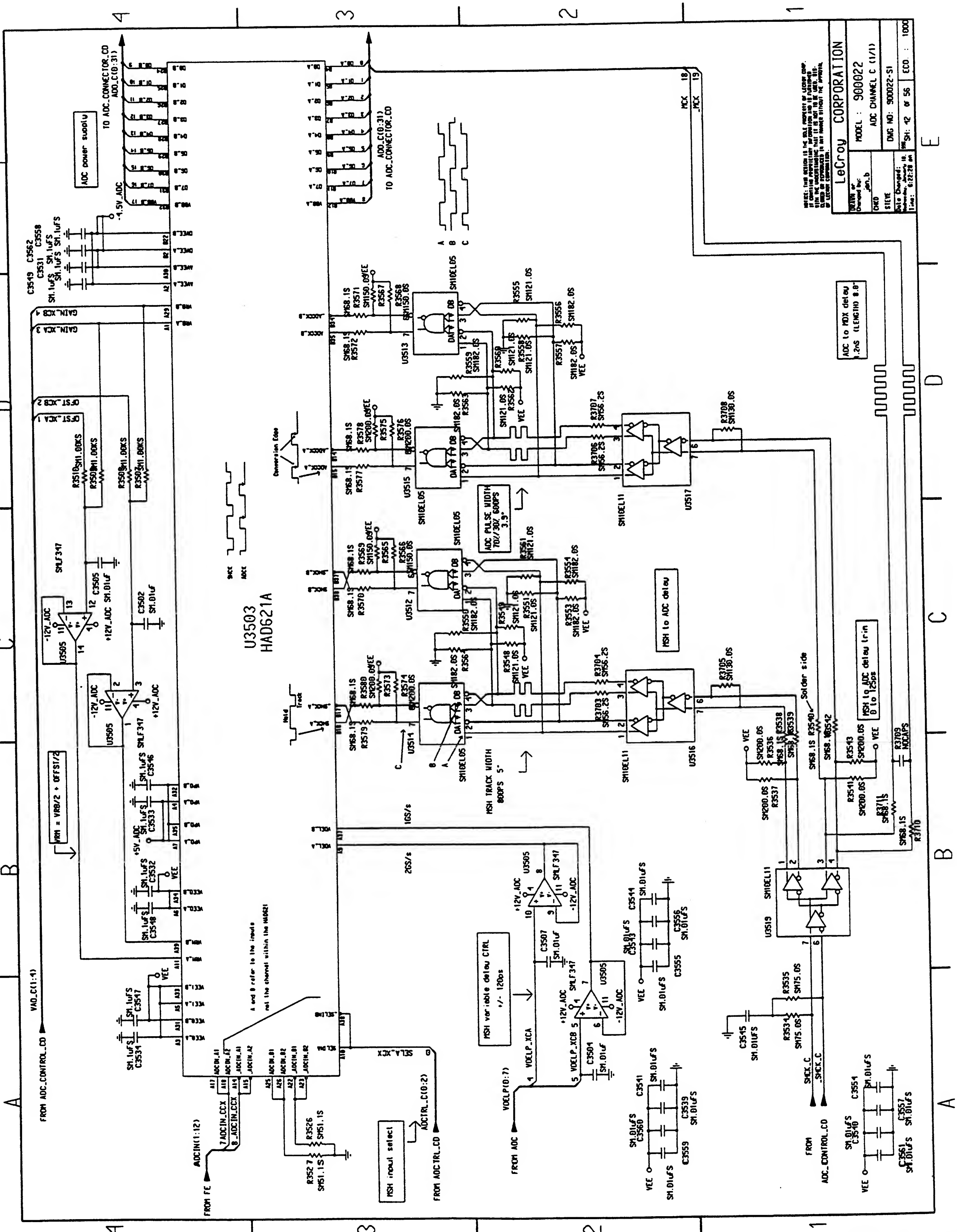
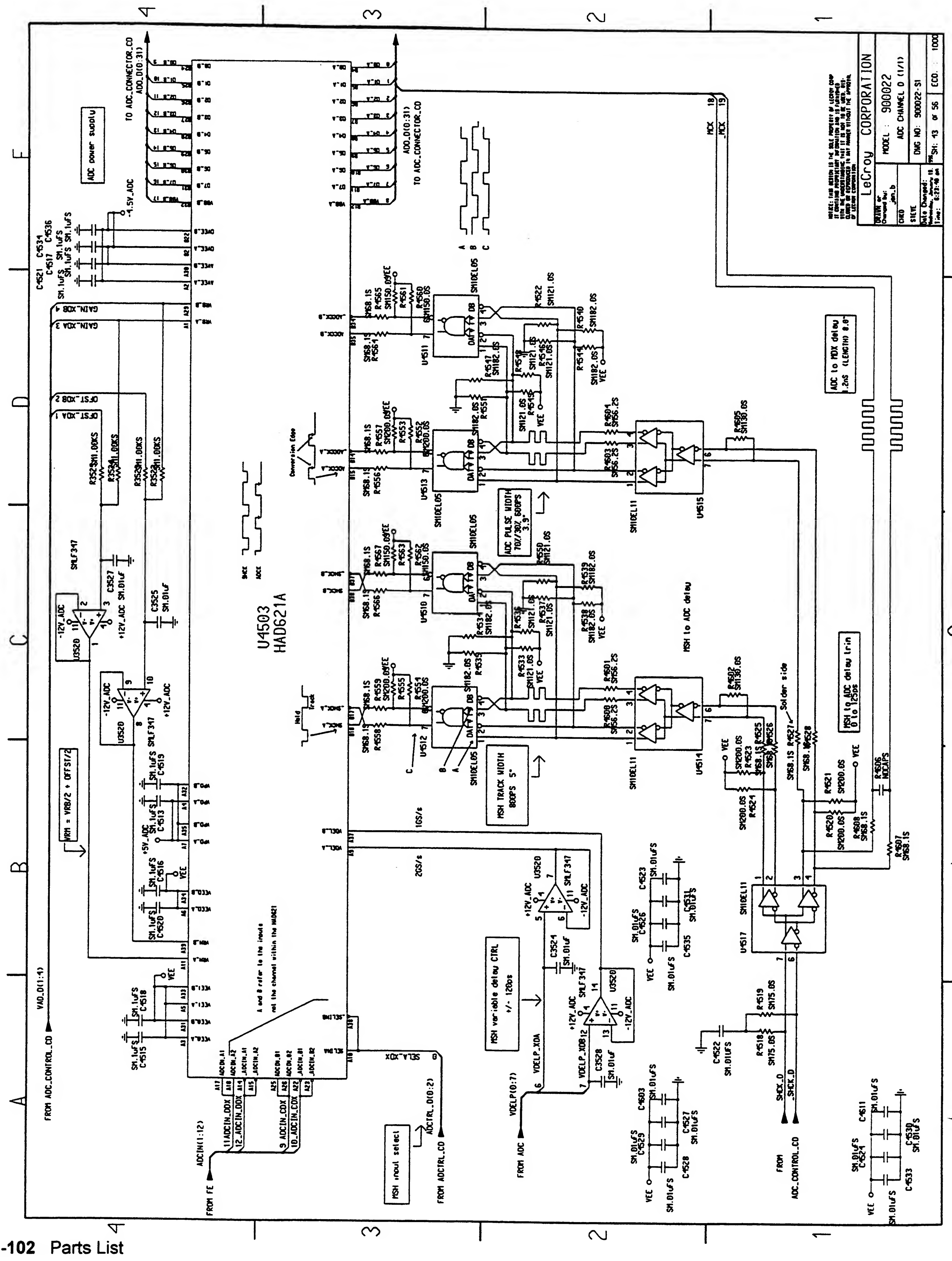
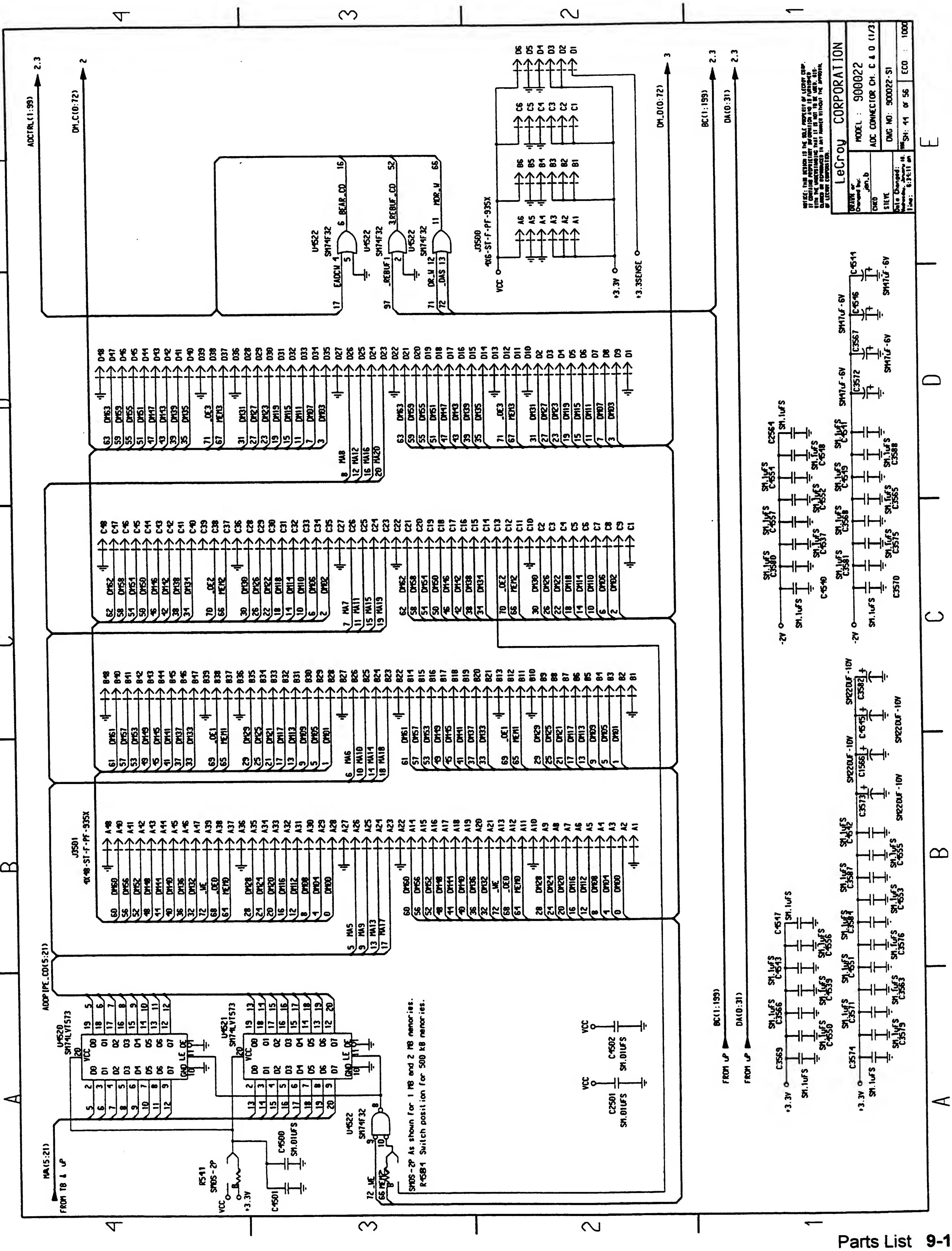
LeCroy CORPORATION
DRAWN or Changed by: jen_b
CHKD STEVE
Date Changed: Wednesday, January 10, Time: 6:29:31 am
MODEL : 9384-3
ADC BUFFER CHANNEL B (1/1)
DWG NO: SCHEMA-9384-3
SH: 40 OF 56
ECO. : 1300
A B C D E
1 2 3 4

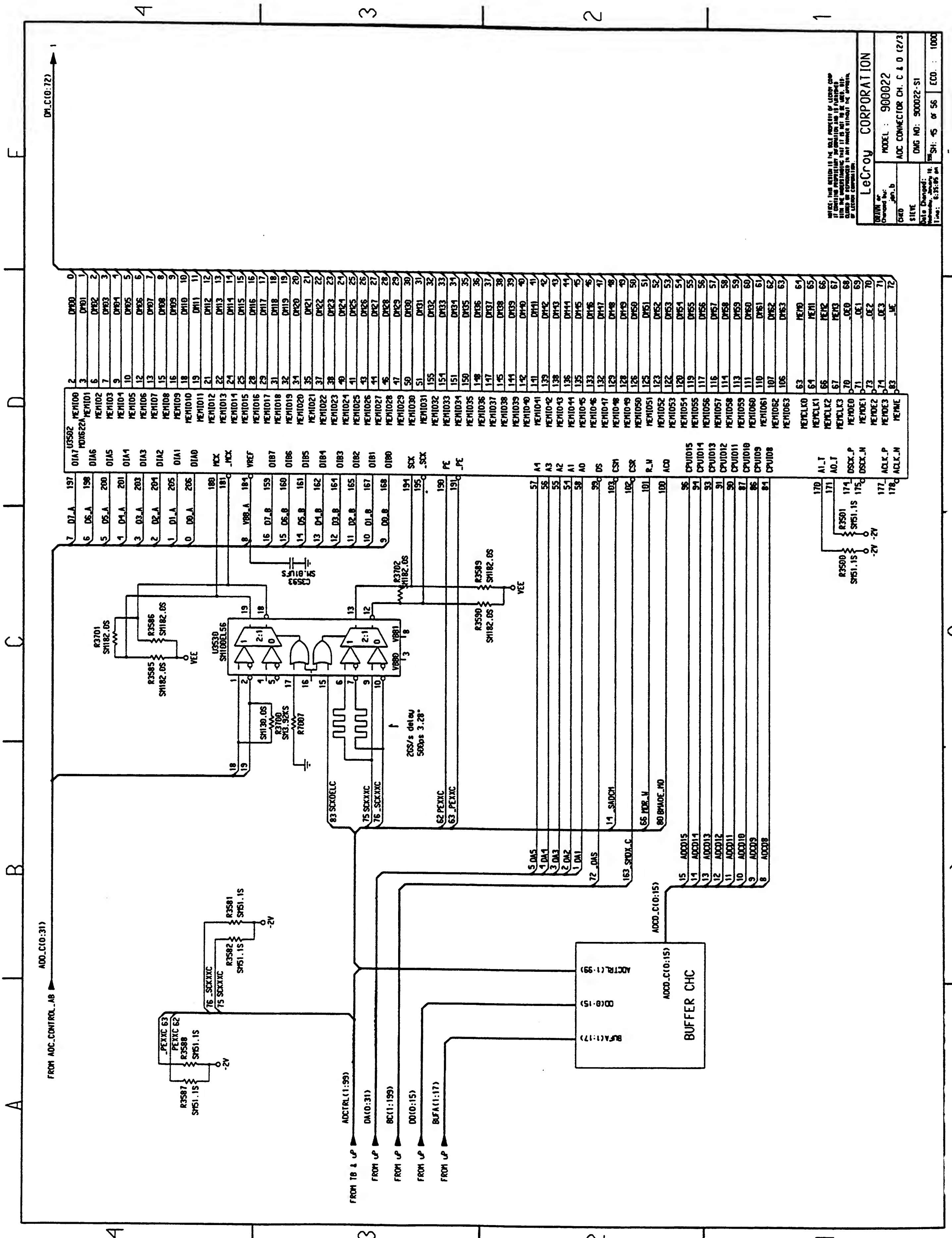

LeCroy CORPORATION
MODEL: 900022
ADC CONTROL CH. C & D (1/1)
DWG NO: 900022-S1
SH: 41 of 56
ECO: 1000
DRAWN BY: jan_b
CHKD
STEVE
Rising edge delay +/- 175 ps
interch. delay adjust 0 to 125 ps
2GS/s delay 500ps 3.28"
2GS/s delay 500ps 2.8"
ADC CHC
ADC CHD
ADCIN(1:12)
ADC_C(0:31)
ADC_D(0:31)
VDELP(0:7)
ADCTRL_C(0:2)
ADCTRL_D(0:2)
VAD_C(1:4)
VAD_D(1:4)
SHCK_C
SHCK_D
TO ADC_CONNECTOR
TO ADC
TO ADC_CONNECTOR_C
TO ADC_CONNECTOR_D
ADCTRL(1:99)
_CLKDELCD
U3540 SM100EL56
U3521 SM74HC594
U3507 SMDAC8800
U3504 SM10EL11
U3505 U3506 SMLF347
U4503 U4504 SMLF347
CLKDELC
_CLKDELD
4GS/s 2GS/s Other
SELA_XCX
SELA_XDX
SCKDELC 83
SCKDELD 84
OFST_XCA
OFST_XCB
OFST_XDA
OFST_XDB
GAIN_XCA
GAIN_XCB
GAIN_XDA
GAIN_XDB
VRH: +.65V / 0.21V
RB: -1.83V / -2.16V
Enables CAL eeprom
BZX84-C5V1
_RESET
_TRAO_CD
_SCKA
SDNA
SPTC
FROM uP
BC(1:199)
ADCIN(1:12)
VDELP(0:7)
SICK_CD
_SICK_CD
FROM ADC
+12V_ADC
-12V_ADC
+5V_ADC
VEE


LeCroy CORPORATION
MODEL : 900022
ADC CHANNEL C (1/1)
DWG NO: 900022-S1
SH: 42 of 56
ECO : 1000
U3503
HAD621A
ADC power supply
TO ADC_CONNECTOR_CD
ADC_C(0:31)
ADC_C(0:31)
TO ADC_CONNECTOR_CD
-4.5V_ADC
GAIN_XCB
GAIN_XCA
OFST_XCB
OFST_XCA
VRM = VRB/2 + OFFST/2
U3505
SMLF347
-12V_ADC
+12V_ADC
+5V_ADC
VEE
FROM ADC_CONTROL_CD
VAD_C(1:4)
ADCIN(1:12)
FROM FE
7 ADCIN_CCX
8 ADCIN_CCX
MSH input select
ADCTRL_C(0:2)
FROM ADCTRL_CD
SELA_XCX
A and B refer to the inputs not the channel within the HAD621
1GS/s
2GS/s
MSH variable delay CTRL +/- 120ps
VDCLP(0:7)
FROM ADC
VDCLP_XCA
VDCLP_XCB
Conversion Edge
Hold
Track
MSH TRACK WIDTH 800PS 5"
ADC PULSE WIDTH 70%/30% 600PS 3.9"
MSH to ADC delay
MSH to ADC delay trim 0 to 125ps
ADC to MDX delay 1.2nS (LENGTH) 8.0"
Solder side
SM10EL05
SM10EL11
U3512
U3513
U3514
U3515
U3516
U3517
U3519
MCK 18
_MCK 19
SHCK_C
_SHCK_C
FROM ADC_CONTROL_CD


LeCroy CORPORATION
MODEL : 900022
ADC CHANNEL D (1/1)
DWG NO: 900022-S1
SH: 43 of 56
ECO. : 1000
DRAWN or Changed by: jan_b
CHKD
STEVE
U4503
HAD621A
ADC power supply
TO ADC_CONNECTOR_CD ADO_D(0:31)
ADO_D(0:31) TO ADC_CONNECTOR_CD
MCK
_MCK
ADC to MCK delay 1.2nS (LENGTH) 8.0"
ADC PULSE WIDTH 70/30% 600PS 3.9"
MSH TRACK WIDTH 800PS 5"
MSH to ADC delay
MSH to ADC delay trim 0 to 125ps
Solder side
Conversion Edge
Hold
Track
SHCK
ADCK
A and B refer to the inputs not the channel within the HAD621
1GS/s
2GS/s
VRM = VRB/2 + OFFST/2
MSH variable delay CTRL +/- 120ps
MSH input select
FROM ADC_CONTROL_CD
VAD_D(1:4)
FROM FE
ADCIN(1:12)
FROM ADCTRL_CD
ADCTRL_D(0:2)
FROM ADC
VDELP(0:7)
SHCK_D
_SHCK_D
FROM ADC_CONTROL_CD
U4511
U4513
U4510
U4512
U4514
U4515
U4517
U3520
SMDEL05
SMDEL11
SMLF347
GAIN_XDA
GAIN_XDB
OFST_XDA
OFST_XDB
SELA_XDX
VEE
-4.5V_ADC
+12V_ADC
-12V_ADC
+5V_ADC

]


LeCroy CORPORATION
MODEL : 900022
ADC CONNECTOR CH. C & D (1/3)
DWG NO: 900022-S1
SH: 41 of 56
J3500
J3501
U4520 SM74LVT573
U4521 SM74LVT573
U4522 SM74F32
R541 SMDS-2P
ADCTRL(1:99)
DM_C(0:72)
DM_D(0:72)
BC(1:199)
DA(0:31)
ADDPIPE_CD(5:21)
MA(5:21) FROM TB & uP
FROM uP
VCC
+3.3V
+3.3SENSE
-2V
SMDS-2P As shown for 1 MB and 2 MB memories.
R4584 Switch position for 500 kB memories.


LeCroy CORPORATION
MODEL : 900022
ADC CONNECTOR CH. C & D (2/3)
DWG NO: 900022-S1
SH: 45 of 56
ECO. : 1000
DRAWN or Changed by: jan_b
CHKD
STEVE
Date Changed:
Time: 6:35:05 am
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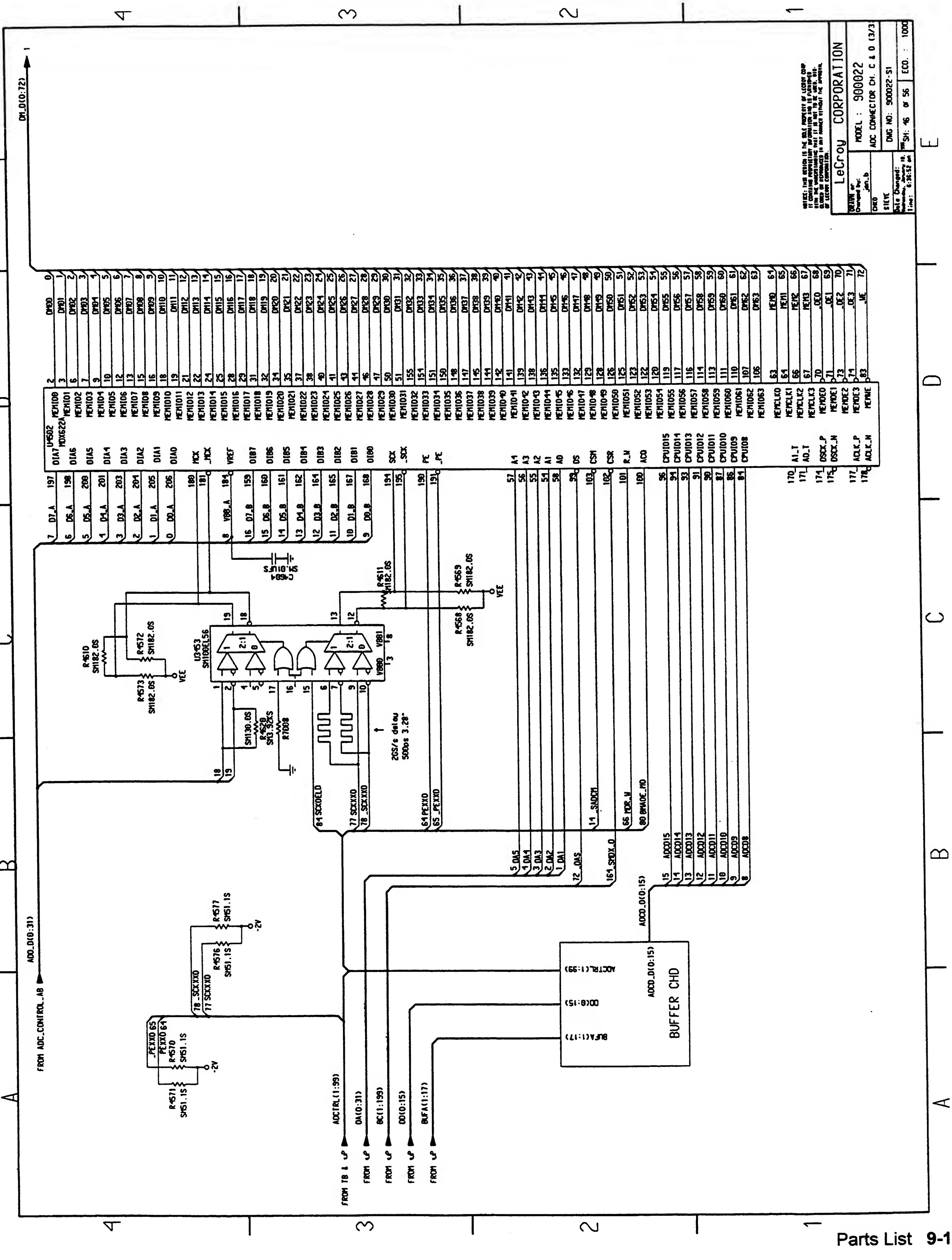
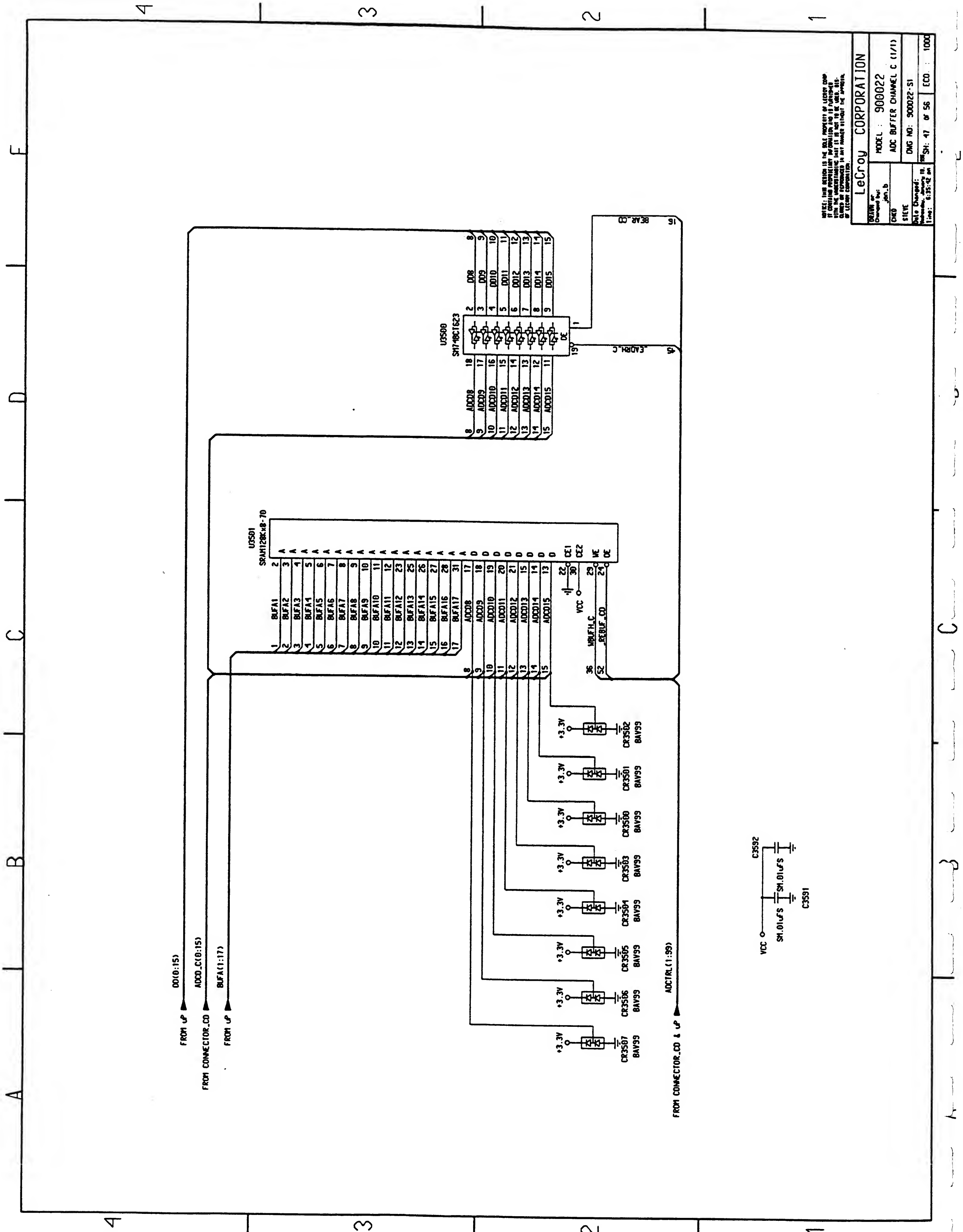
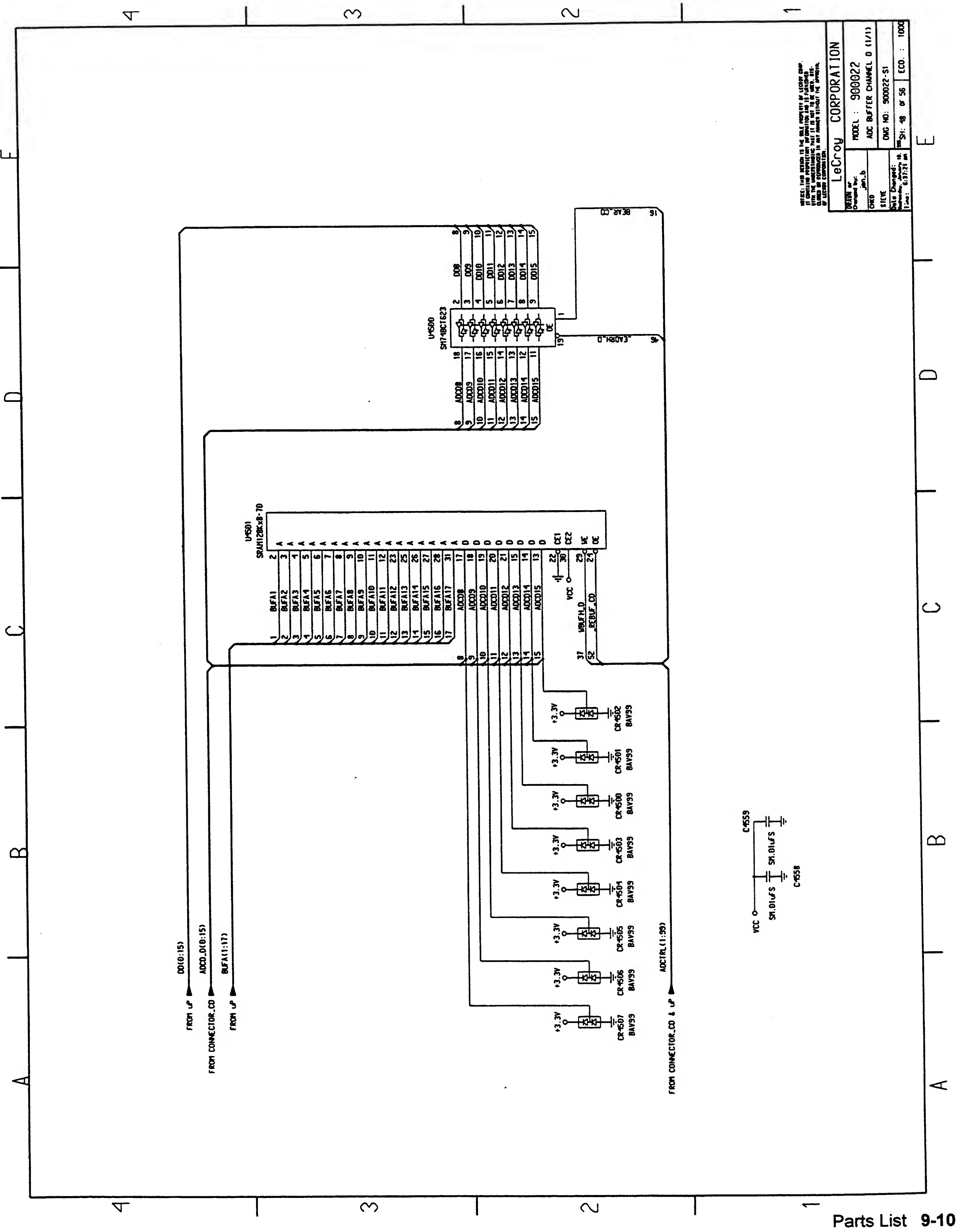
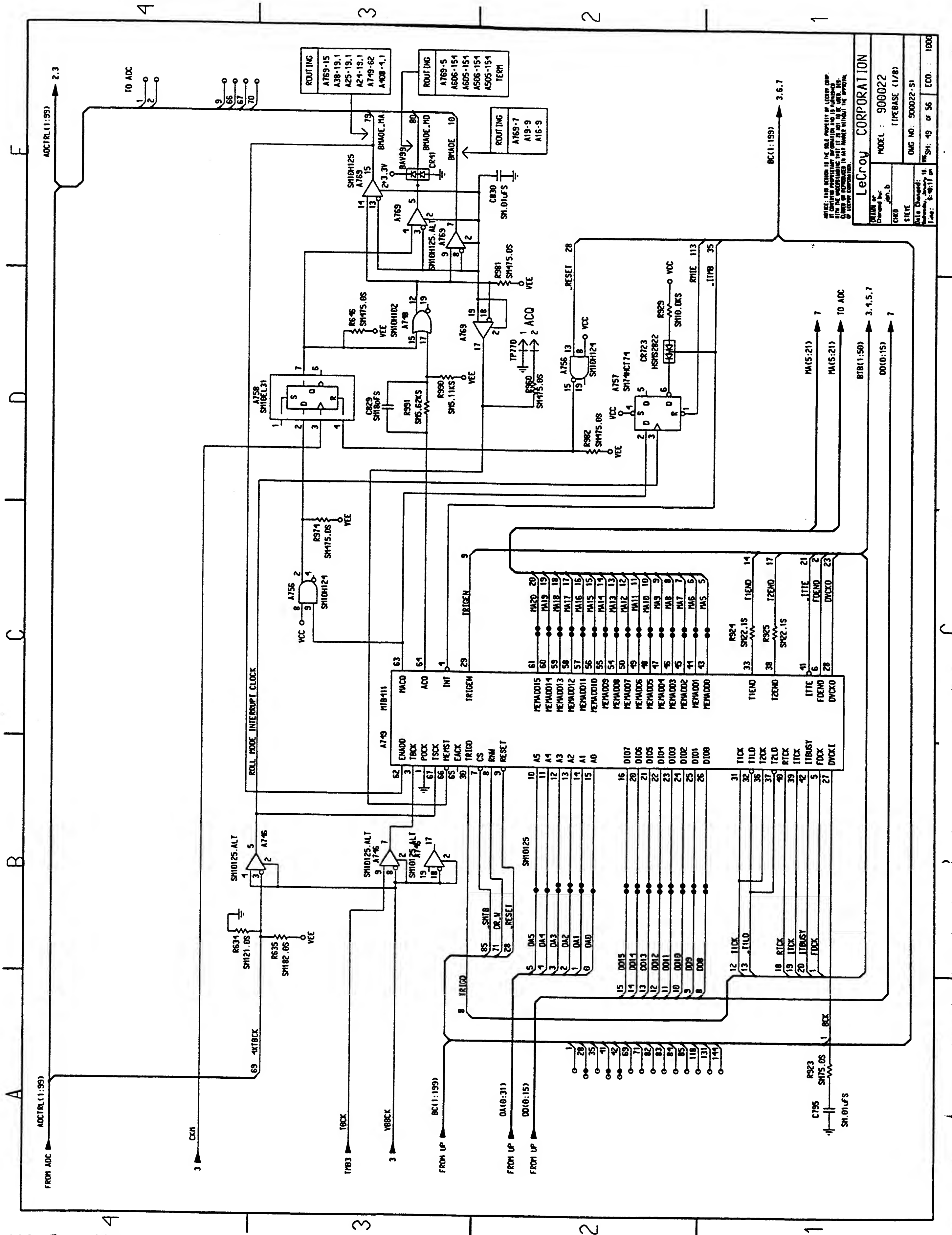
DM_C(0:72)
U3502
MDX622A
U3530
SH100EL56
BUFFER CHC
ADCD_C(0:15)
ADCTRL(1:99)
DD(0:15)
BUFA(1:17)
ADD_C(0:31)
FROM ADC_CONTROL_A8
R3701 SM182.0S
R3586 SM182.0S
R3585 SM182.0S
R3700 SM3.92KS
R7007
SM130.0S
R3702 SM182.0S
R3589 SM182.0S
R3590 SM182.0S
R3501 SM51.1S
R3500 SM51.1S
R3581 SM51.1S
R3582 SM51.1S
R3588 SM51.1S
R3587 SM51.1S
C3593 SM.01UFS
VEE
-2V
2GS/s delay 500ps 3.28"
83 SCKDELC
75 SCKXXC
76 _SCKXXC
62 PEXXC
63 _PEXXC
14 _SADCM
66 MDR_W
80 BMODE_MD
72 _DAS
163 SMDX_C
ADCTRL(1:99)
DA(0:31)
BC(1:199)
DD(0:15)
BUFA(1:17)
FROM TB & uP
FROM uP
FROM uP
FROM uP
FROM uP
4
3
2
1
F
E
D
C
B
A

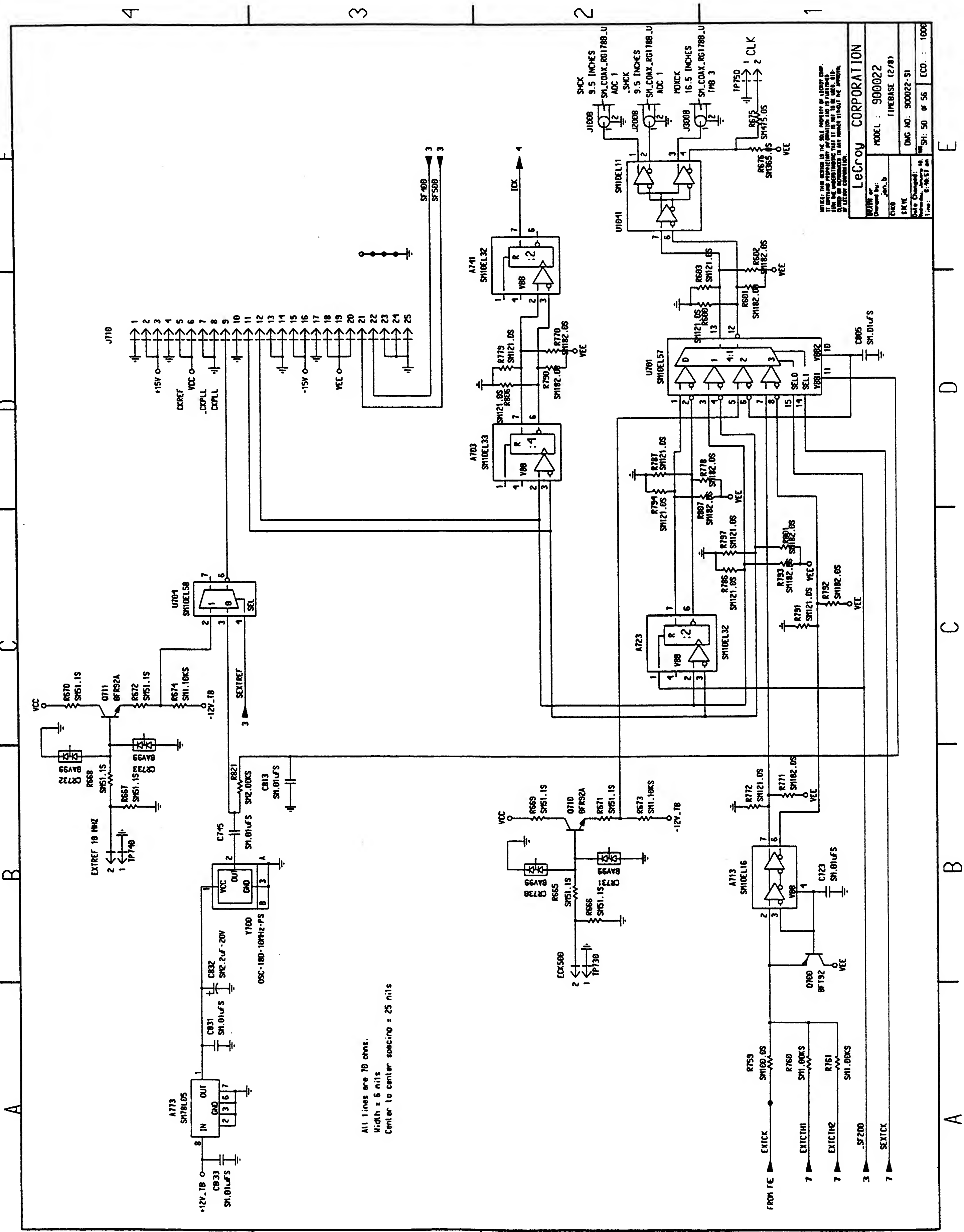

NOTICE: THIS DESIGN IS THE SOLE PROPERTY OF LECROY CORP IT CONTAINS PROPRIETARY INFORMATION AND IS FURNISHED WITH THE UNDERSTANDING THAT IT IS NOT TO BE USED, DISCLOSED OR REPRODUCED IN ANY MANNER WITHOUT THE APPROVAL OF LECROY CORPORATION.
LeCroy CORPORATION
MODEL : 900022
ADC CONNECTOR CH. C & D (3/3
DWG NO: 900022-S1
SH: 46 of 56
ECO. : 1000
DRAWN or Changed by: jan_b
CHKD
STEVE
Date Changed:
Time: 6:36:52 am
DM_D(0:72)
DM00 … DM63
MEM0
MEM1
MEM2
MEM3
_OE0
_OE1
_OE2
_OE3
_WE
U4502
MDX622A
MEMIO0 … MEMIO63
MEMCLK0
MEMCLK1
MEMCLK2
MEMCLK3
MEMOE0
MEMOE1
MEMOE2
MEMOE3
MEMWE
DIA7 … DIA0
MCK
_MCK
VREF
DIB7 … DIB0
SCK
_SCK
PE
_PE
A4
A3
A2
A1
A0
DS
CSM
CSR
R_W
ACO
CPUIO15 … CPUIO8
A1_T
A0_T
DSCK_P
DSCK_N
ACLK_P
ACLK_N
D7_A … D0_A
V88_A
D7_B … D0_B
C4584
SM.01US
R4611
SM182.0S
R4569
SM182.0S
R4568
SM182.0S
VEE
U3453
SM100EL56
2:1
V8B1
V8B0
R4610
SM182.0S
R4572
SM182.0S
R4573
SM182.0S
SM130.0S
R4629
SM13.32KS
R7008
2GS/s delay
500ps 3.28"
84 SCKDELD
77 SCKXX0
78 _SCKXX0
64 PEXX0
65 _PEXX0
14 _SADCM
66 MDR_W
80 BMADE_MO
5 DA5
4 DA4
3 DA3
2 DA2
1 DA1
12 _DAS
161 SMDX_0
ADCD15 … ADCD8
ADCD_D(0:15)
ADCTRL(1:99)
DD(8:15)
BUFA(1:17)
BUFFER CHD
R4577
SM51.1S
R4576
SM51.1S
-2V
78 _SCKXX0
77 SCKXX0
_PEXX0 65
PEXX0 64
R4570
SM51.1S
R4571
SM51.1S
ADD_D(0:31)
FROM ADC_CONTROL_AB
ADCTRL(1:99)
DA(0:31)
BC(1:199)
DD(0:15)
BUFA(1:17)
FROM TB & CP
FROM CP
FROM CP
FROM CP
FROM CP
1
2
3
4
A
B
C
D
E

Schematics, Layouts




LeCroy CORPORATION
MODEL : 900022
ADC BUFFER CHANNEL D (1/1)
DWG NO: 900022-S1
SH: 48 OF 56
ECO. : 1000
DRAWN or Changed by: jen_b
CHKD
STEVE
Date Changed:
Time: 6:37:21 am
U4500
SN74BCT623
OE
U4501
SRAM128Kx8-70
CE1
CE2
WE
OE
VCC
WBUFH_D
_REBUF_CD
BEAR_CD
_EADRH_D
BUFA1
BUFA2
BUFA3
BUFA4
BUFA5
BUFA6
BUFA7
BUFA8
BUFA9
BUFA10
BUFA11
BUFA12
BUFA13
BUFA14
BUFA15
BUFA16
BUFA17
ADCD8
ADCD9
ADCD10
ADCD11
ADCD12
ADCD13
ADCD14
ADCD15
DD8
DD9
DD10
DD11
DD12
DD13
DD14
DD15
DD(0:15)
FROM uP
ADCD_D(0:15)
FROM CONNECTOR_CD
BUFA(1:17)
FROM uP
ADCTRL(1:99)
FROM CONNECTOR_CD & uP
+3.3V
CR4502
CR4501
CR4500
CR4503
CR4504
CR4505
CR4506
CR4507
BAV99
C4559
C4558
SM.01uFS
VCC
A
B
C
D
E
1
2
3
4


LeCroy CORPORATION
MODEL : 900022
TIMEBASE (1/8)
DWG NO: 900022-S1
SH: 49 of 56
ADCTRL(1:99)
FROM ADC
TO ADC
CKM
TBCK
TMB3
VBBCK
BC(1:199)
FROM UP
DA(0:31)
DD(0:15)
MA(5:21)
BTB(1:50)
ROLL MODE INTERRUPT CLOCK
A749
MTB411
A758
SM10EL31
A756
SM10H124
A757
SM74HC774
A769
SM10H125
A748
SM10H102
A746
SM10125.ALT
SM10125
CR41
BAV99
CR723
HSMS2822
TP770
ACQ
BMADE_MA
BMADE_MD
BMADE
_RESET
RMIE
_ITMB
TRIGEN
TIEND
T2END
_ITTE
FDCKO
DVCKO
ROUTING
TERM
R634
R635
R646
R974
R981
R982
R990
R991
R923
R924
R925
R929
R960
C829
C830
C795
VCC
VEE


LeCroy CORPORATION
MODEL : 900022
TIMEBASE (2/8)
DWG NO: 900022-S1
SH: 50 OF 56
ECO. : 1000
DRAWN or Changed by: jon_b
CHKD
STEVE
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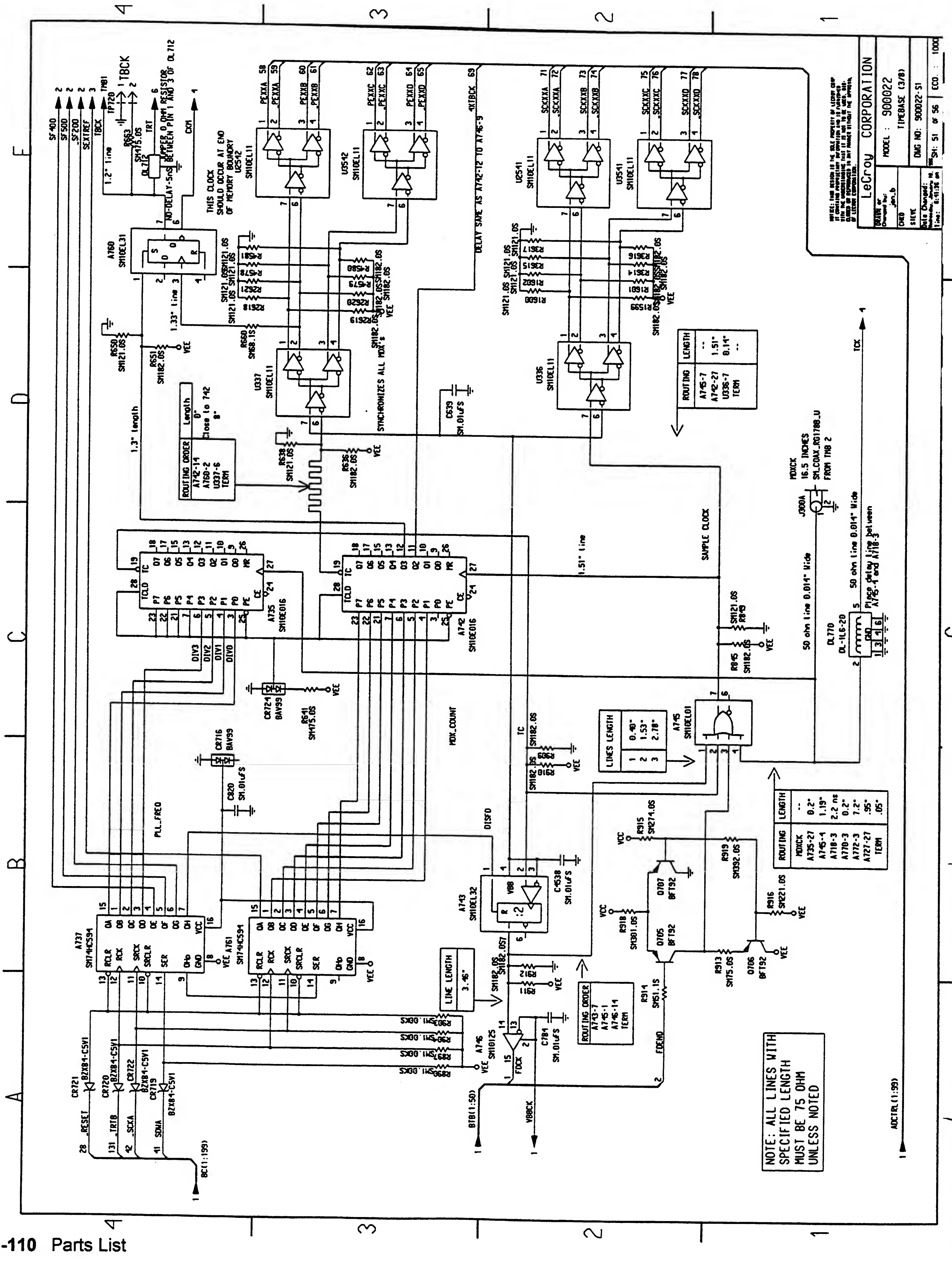
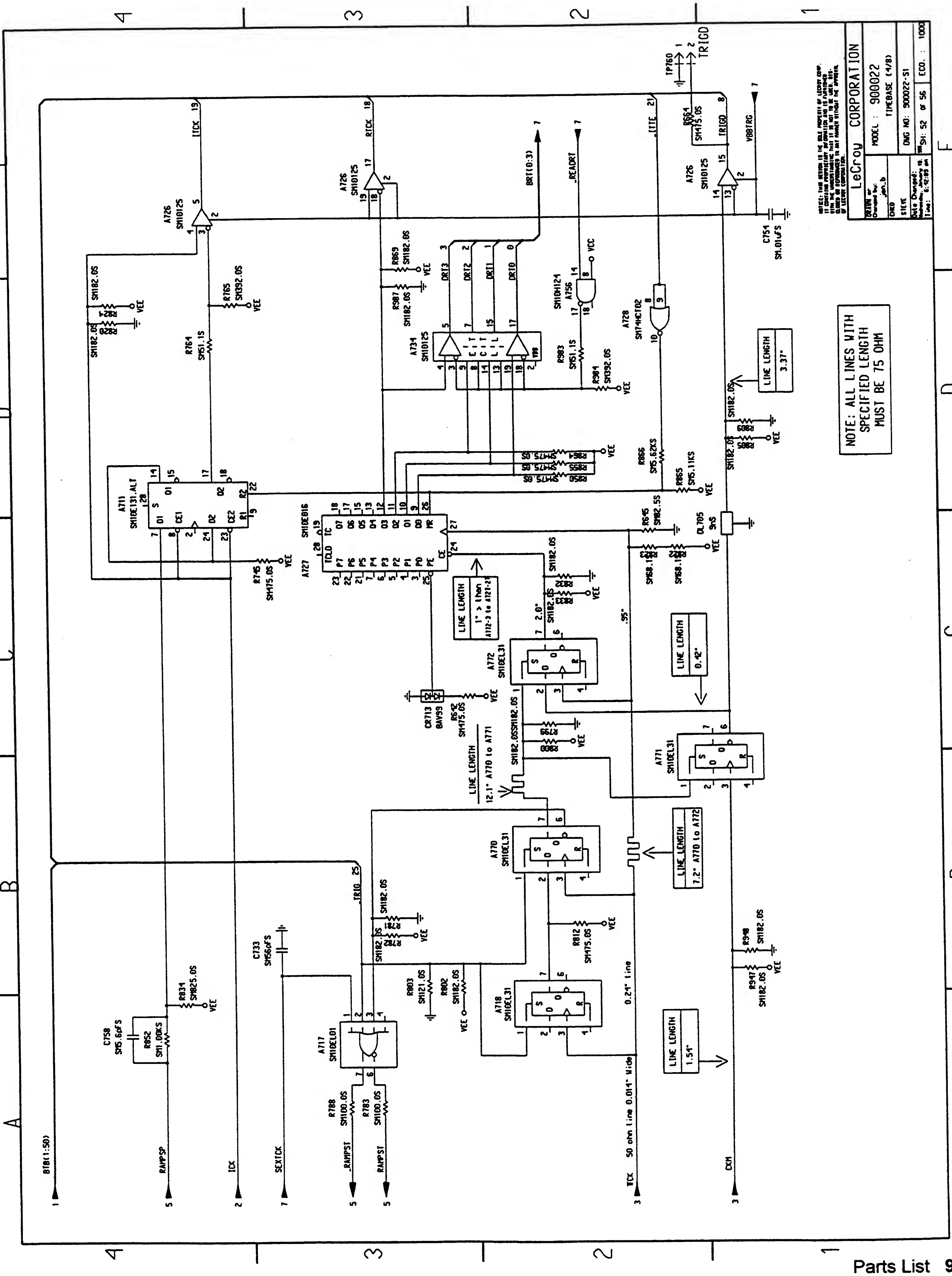
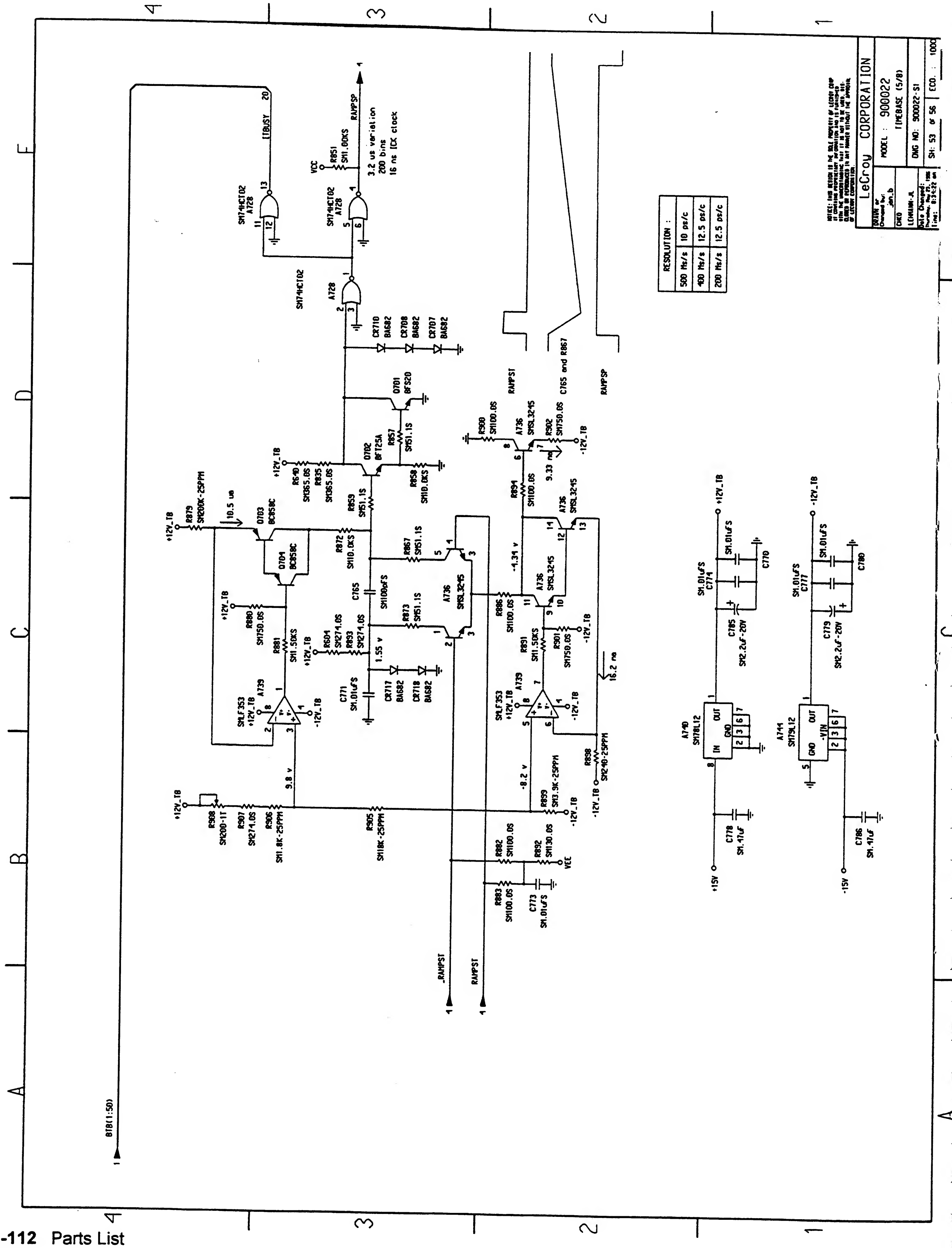
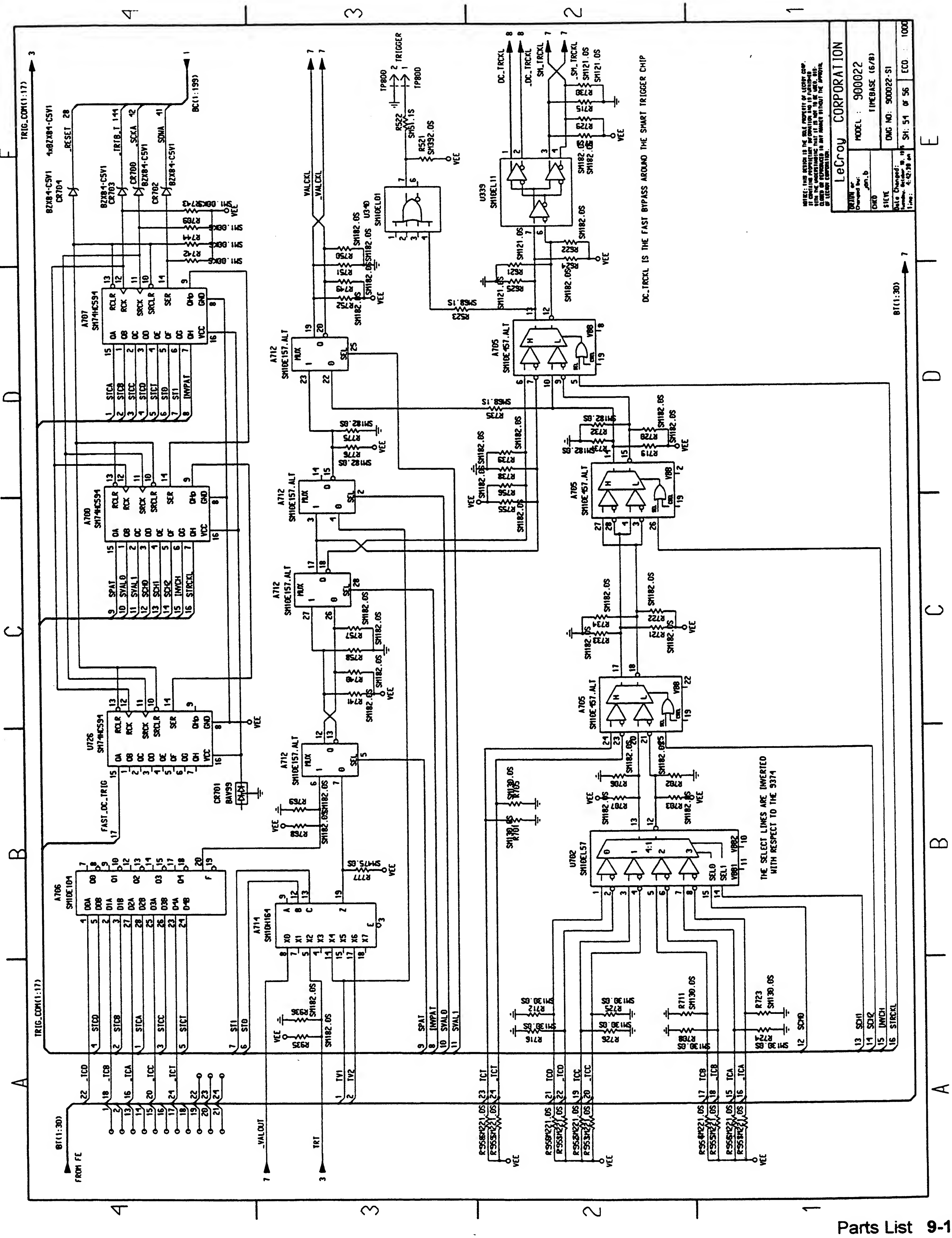
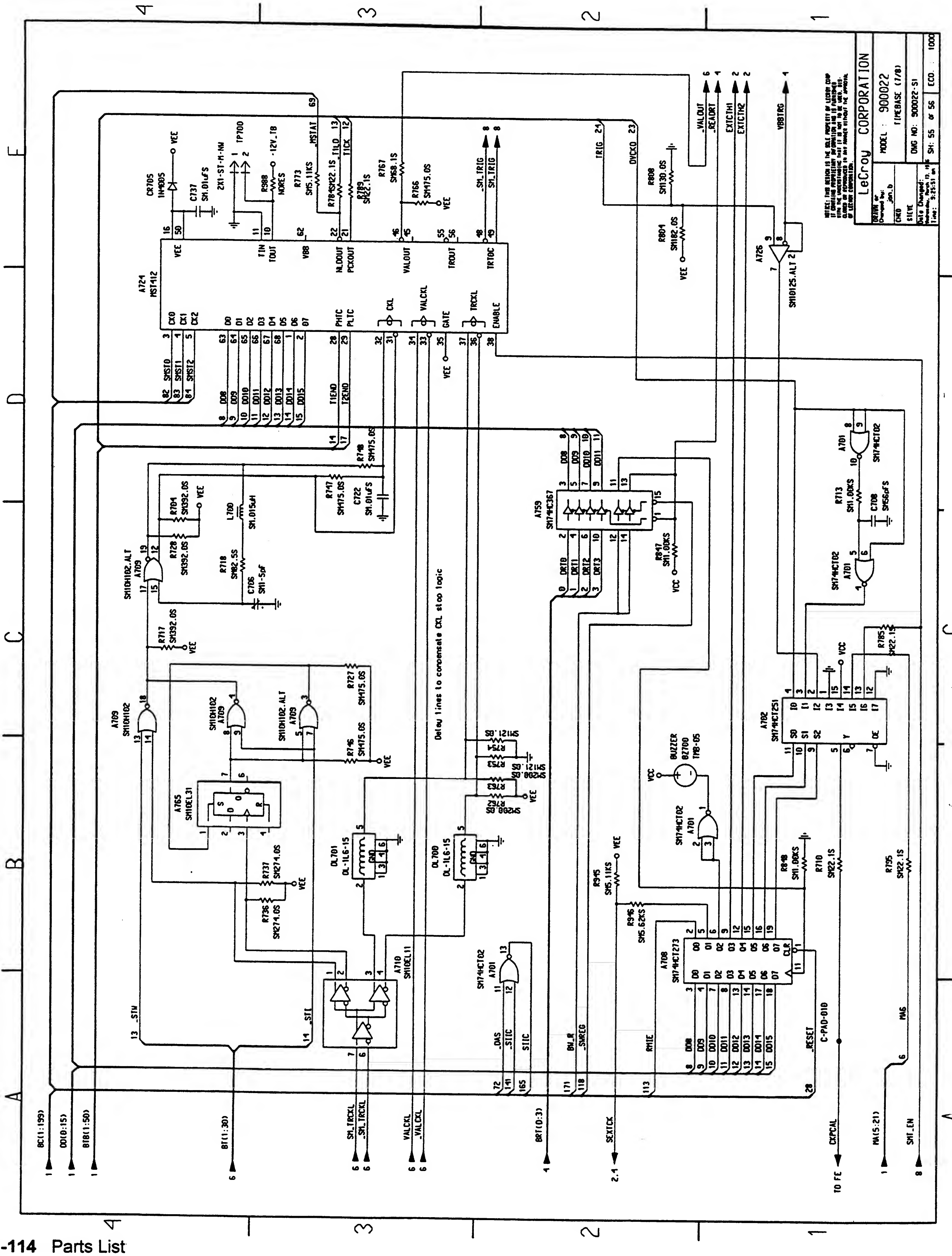
All lines are 70 ohms.
Width = 6 mils
Center to center spacing = 25 mils
J1008
J2008
J3008
SHCK
-SHCK
MOXCK
9.5 INCHES
16.5 INCHES
SM_COAX_RG178B_U
ADC 1
TMB 3
TP750
CLK
U1041
SM10EL11
R675
SM475.0S
R676
SM365.0S
VEE
A741
SM10EL32
ICK
SF400
SF500
J710
+15V
-15V
VCC
CXREF
-CXPLL
CXPLL
R603
R602
R601
R600
SM121.0S
SM182.0S
U701
SM10EL57
SEL0
SEL1
VBB1
VBB2
C805
SM.01uFS
R779
R770
R805
R790
A703
SM10EL33
U704
SM10EL58
SEL
SEXTREF
R787
R778
R794
R807
R797
R881
R786
R793
R792
R791
A723
SM10EL32
VCC
R670
SM51.1S
Q711
BFR92A
R672
R674
SM1.10KS
-12V_TB
CR732
BAV99
CR731
R668
R667
EXTREF 10 MHZ
TP740
R821
SM2.00KS
C813
C745
SM.01uFS
Y700
OSC-180-10MHz-PS
C832
SM2.2uF-20V
C831
A773
SM78L05
IN
OUT
GND
+12V_TB
C833
R669
Q710
BFR92A
R671
R673
CR730
CR733
R665
R666
ECK500
TP730
R772
R771
A713
SM10EL16
C723
Q700
BFT92
R759
SM100.0S
R760
SM1.00KS
R761
EXTCK
EXTCTH1
EXTCTH2
_SF200
SEXTCK
FROM FE

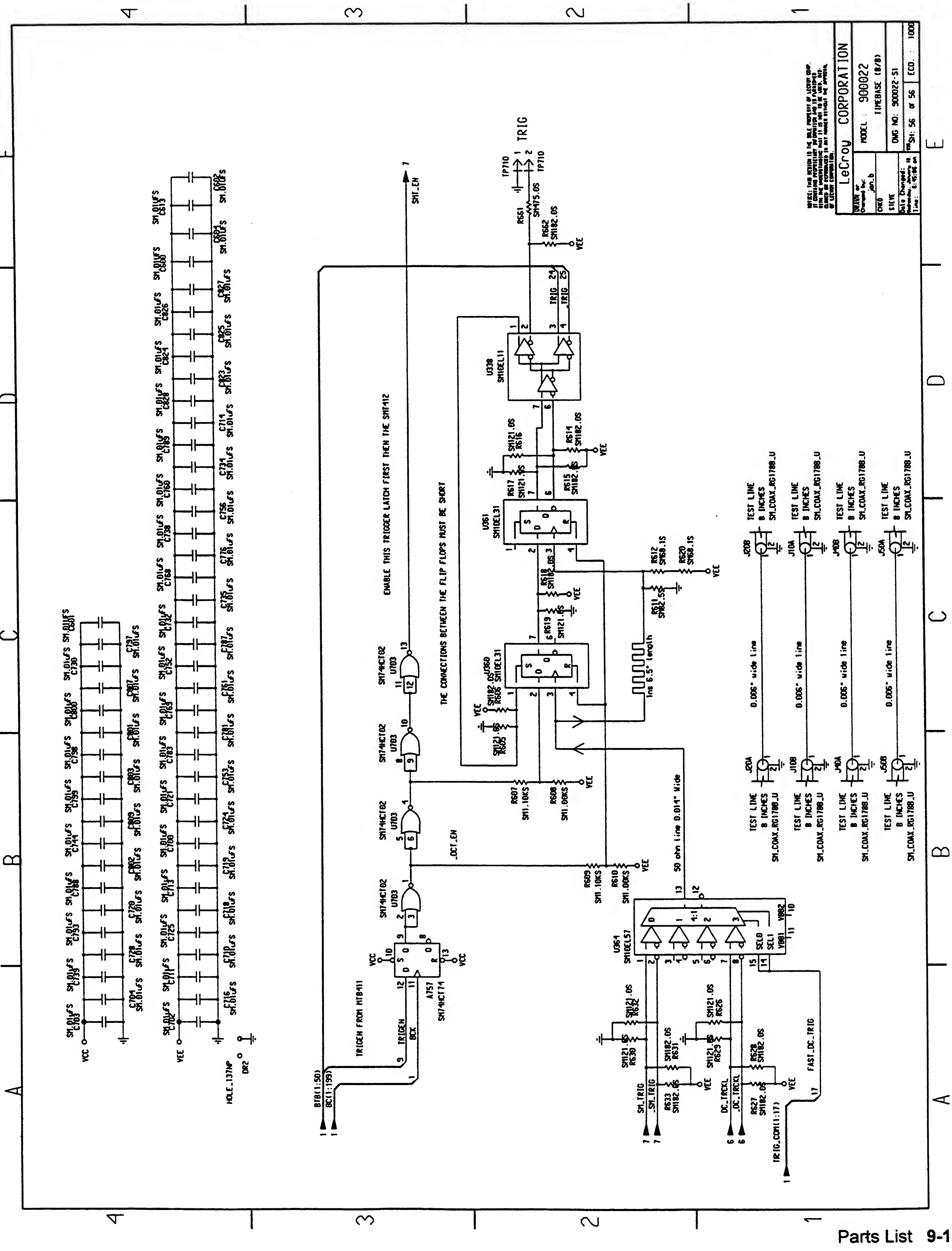

LeCroy CORPORATION
MODEL : 900022
TIMEBASE (3/8)
DWG NO: 900022-S1
SH: 51 of 56
ECO. : 1000
DRAWN or Changed by: jon_b
CHKD
STEVE
Date Changed:
Time:
NOTE: ALL LINES WITH SPECIFIED LENGTH MUST BE 75 OHM UNLESS NOTED
THIS CLOCK SHOULD OCCUR AT END OF MEMORY BOUNDRY U2542
DELAY SAME AS A742-12 TO A746-9
SYNCHRONIZES ALL MUX's
JUMPER 0_OHM RESISTOR BETWEEN PIN 1 AND 3 OF DL712
NO-DELAY-5nS
1.2" line
1.33" line
1.3" length
1.51" line
SAMPLE CLOCK
MUX_COUNT
PLL_FREQ
DISFD
TC
TCK
TBCK
CKM
TRT
SF400
SF500
_SF200
_SEXTREF
MUXCK
16.5 INCHES
SM_COAX_RO178B_U
FROM THB 2
50 ohm line 0.014" Wide
Place delay line between A745-1 and A718-3
ROUTING ORDER
A742-14
A760-2
U337-6
TERM
Length
0"
Close to 742
8"
ROUTING
A745-7
A742-27
U336-7
TERM
LENGTH
--
1.51"
0.14"
--
LINES LENGTH
1 0.40"
2 1.53"
3 2.78"
ROUTING
MUXCK
A735-27
A745-1
A718-3
A770-3
A772-3
A727-27
TERM
LENGTH
--
0.2"
1.19"
2.2 ns
0.2"
7.2"
.95"
.05"
ROUTING ORDER
A743-7
A745-1
A746-14
TERM
LINE LENGTH
3.46"
A760 SM10EL31
U2542 SM10EL11
U3542 SM10EL11
U2541 SM10EL11
U3541 SM10EL11
U337 SM10EL11
U336 SM10EL11
A735 SM10E016
A742 SM10E016
A745 SM10EL01
A743 SM10EL32
A746 SM10125
A737 SM74HC594
A761 SM74HC594
DL770 DL-1L6-20
J300A
Q705 BFT92
Q706 BFT92
Q707 BFT92
CR716 BAV99
CR724 BAV99
CR719 BZX84-C5V1
CR720 BZX84-C5V1
CR721 BZX84-C5V1
CR722 BZX84-C5V1
C639 SM.01uFS
C820 SM.01uFS
C4538 SM.01uFS
C784 SM.01uFS
PEXXA 58
_PEXXA 59
PEXXB 60
_PEXXB 61
PEXXC 62
_PEXXC 63
PEXXD 64
_PEXXD 65
4XTBCK 69
SCXXA 71
_SCXXA 72
SCXXB 73
_SCXXB 74
SCXXC 75
_SCXXC 76
SCXXD 77
_SCXXD 78
28 _RESET
131 _TRTB
42 _SCKA
41 SDNA
BC(1:199)
BTB(1:50)
VBBCK
FDCK
FDENO
ADCTRL(1:99)
DIV0
DIV1
DIV2
DIV3
VEE
VCC

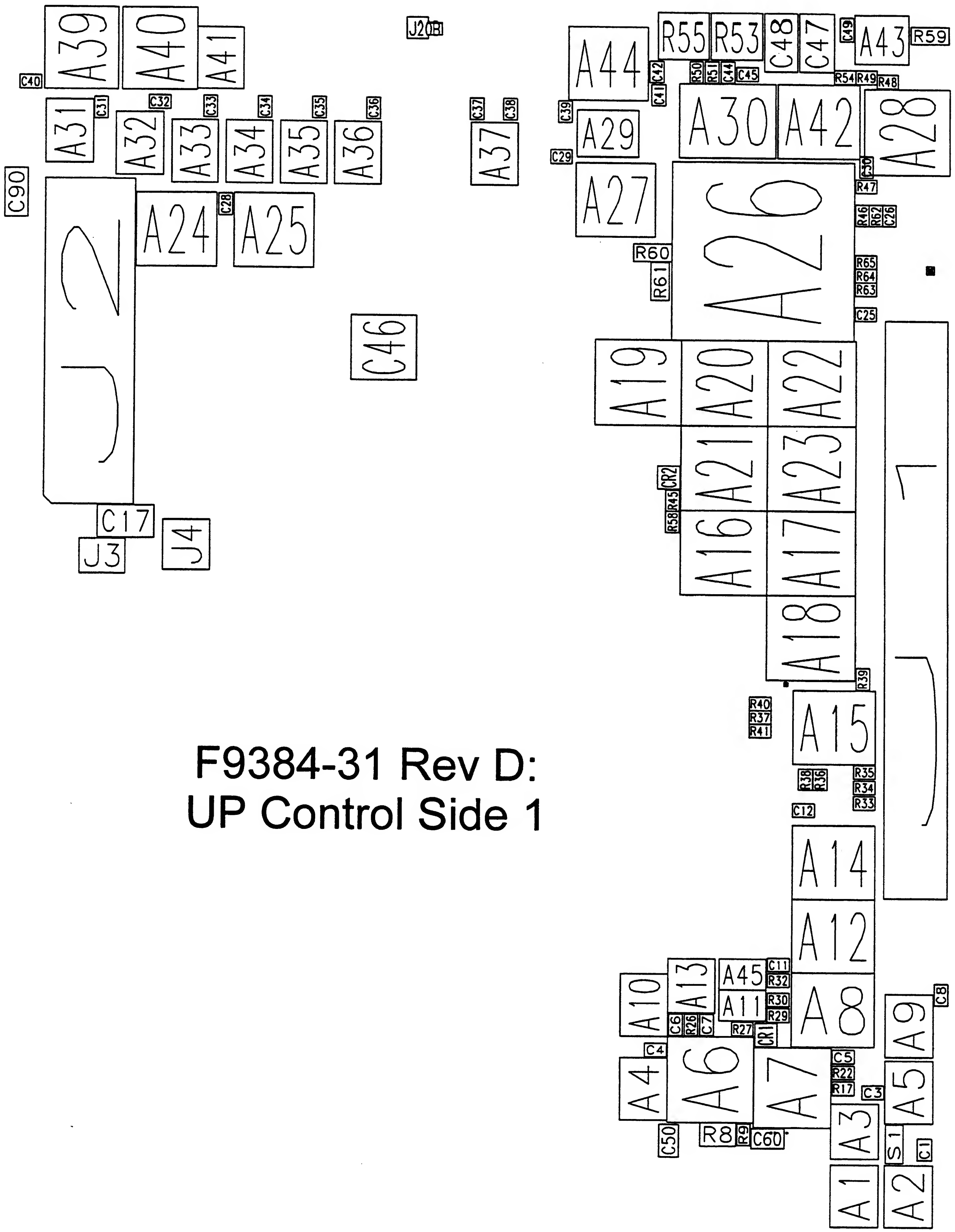

LeCroy CORPORATION
MODEL : 900022
TIMEBASE (4/8)
DWG NO: 900022-S1
SH: 52 of 56
ECO. : 1000
NOTE: ALL LINES WITH SPECIFIED LENGTH MUST BE 75 OHM
TRIGO
TP760
ITCK 19
RTCK 18
_ITE 21
TRIGO 8
VBBTRG 7
BRT(0:3) 7
_READRT 7
A726 SM10125
A734 SM10125
A756 SM10H124
A728 SM74HCT02
A711 SM10E131.ALT
A727 SM10E016
A772 SM10EL31
A771 SM10EL31
A770 SM10EL31
A718 SM10EL31
A717 SM10EL01
C751 SM.01uFS
C733 SM56pFS
C758 SM5.6pFS
CR713 BAV99
DL705 5nS
DRT0
DRT1
DRT2
DRT3
VCC
VEE
LINE LENGTH 3.37"
LINE LENGTH 1" > than A112-3 to A121-2
LINE LENGTH 0.42"
LINE LENGTH 12.1" A770 to A771
LINE LENGTH 7.2" A770 to A772
LINE LENGTH 1.54"
2.0"
.95"
0.24" line
50 ohm line 0.014" Wide
_TRIG 25
BTB(1:50) 1
RAMPSP 5
ICK 2
SEXTCK 7
_RAMPST 5
RAMPST 5
TCK 3
CKM 3


4
3
2
1
F
E
D
C
B
A
BTB(1:50)
ITBUSY 20
SM74HCT02
A728
RAMPSP
R851
SM1.0KS
VCC
3.2 us variation
200 bins
16 ns ICK clock
CR710 BA682
CR708 BA682
CR707 BA682
Q701 BFS20
Q702 BFT25A
R857 SM51.1S
R640 SM365.0S
R635 SM365.0S
R658 SM10.0KS
R659 SM51.1S
+12V_TB
-12V_TB
R879 SM200K-25PPM
10.5 ua
Q703 BC858C
Q704 BC858C
R872 SM10.0KS
R867 SM51.1S
R873 SM51.1S
C765 SM100pFS
R880 SM750.0S
R881 SM1.50KS
R604 SM274.0S
R893 SM274.0S
1.55 v
C771 SM.01uFS
CR717 BA682
CR718 BA682
SMLF353
A739
A736
SMSL3245
9.8 v
R908 SM200-1T
R907 SM274.0S
R906 SM1.8K-25PPM
R905 SM18K-25PPM
R900 SM100.0S
R902 SM750.0S
9.33 ma
R894 SM100.0S
-1.34 v
R896 SM100.0S
R891 SM1.50KS
R901 SM750.0S
16.2 ma
-8.2 v
R899 SM3.9K-25PPM
R898 SM240-25PPM
R882 SM100.0S
R892 SM130.0S
VEE
R883 SM100.0S
C773 SM.01uFS
_RAMPST
RAMPST
C765 and R867
RAMPSP
C774 SM.01uFS
SM.01uFS
C770
C785 SM2.2uF-20V
C777 SM.01uFS
SM.01uFS
C780
C779 SM2.2uF-20V
A740 SM78L12
IN GND OUT
A744 SM79L12
GND OUT -VIN
C778 SM.47uF
C786 SM.47uF
+15V
-15V
RESOLUTION :
500 Ms/s 10 ps/c
400 Ms/s 12.5 ps/c
200 Ms/s 12.5 ps/c
NOTICE: THIS DESIGN IS THE SOLE PROPERTY OF LECROY CORP IT CONTAINS PROPRIETARY INFORMATION AND IS FURNISHED WITH THE UNDERSTANDING THAT IT IS NOT TO BE USED, DISCLOSED OR REPRODUCED IN ANY MANNER WITHOUT THE APPROVAL OF LECROY CORPORATION.
LeCroy CORPORATION
DRAWN or Changed by: jon.b
CHKD LEHMANN-JL
Date Changed: Thursday, May 21, 1998 Time: 8:34:22 am
MODEL : 900022
TIMEBASE (5/8)
DWG NO: 900022-S1
SH: 53 of 56
ECO. : 1000

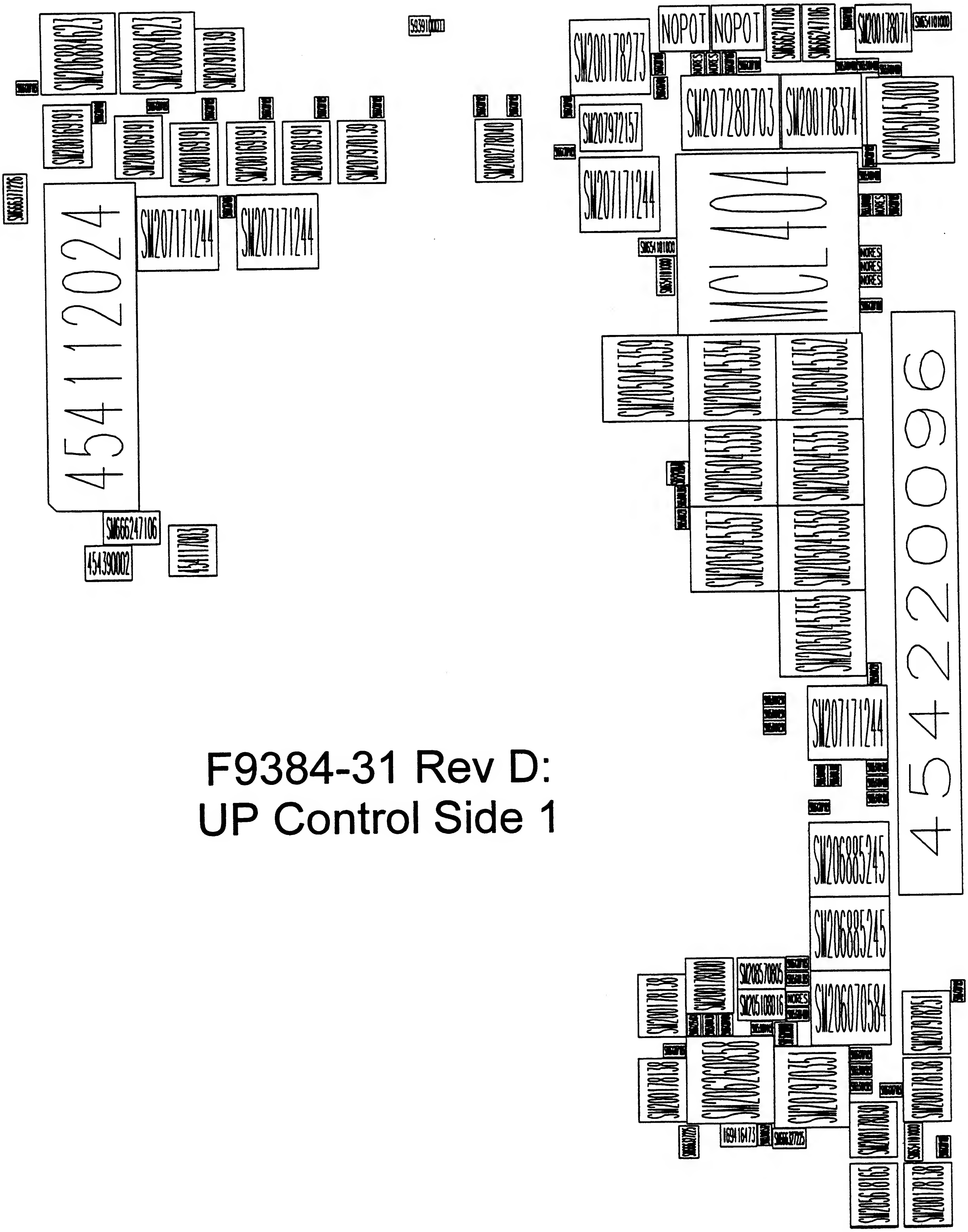

LeCroy CORPORATION
MODEL : 900022
TIMEBASE (6/8)
DWG NO: 900022-S1
SH: 54 OF 56
ECO 1000
DRAWN or Changed by: jon.b
CHKD
STEVE
NOTICE: THIS DESIGN IS THE SOLE PROPERTY OF LECROY CORP. IT CONTAINS PROPRIETARY INFORMATION AND IS FURNISHED WITH THE UNDERSTANDING THAT IT IS NOT TO BE USED, DISCLOSED OR REPRODUCED IN ANY MANNER WITHOUT THE APPROVAL OF LECROY CORPORATION.
DC_TRCKL IS THE FAST BYPASS AROUND THE SMART TRIGGER CHIP
THE SELECT LINES ARE INVERTED WITH RESPECT TO THE 9374
A707 SM74HC594
A708 SM74HC594
U726 SM74HC594
A706 SM10E104
A714 SM10H164
A712 SM10E157.ALT
U340 SM10EL01
U339 SM10EL11
A705 SM10E457.ALT
U702 SM10EL57
CR701 BAV99
TRIG_COM(1:17)
BC(1:199)
BT(1:30)
FROM FE
VALCKL
_VALCKL
_VALOUT
TRT
TRIGGER
TP800
DC_TRCKL
_DC_TRCKL
SM_TRCKL
_SM_TRCKL
FAST_DC_TRIG
VEE


LeCroy CORPORATION
MODEL: 900022
TIMEBASE (1/8)
DWG NO: 900022-S1
SH: 55 of 56
ECO. 1000
A724 MST412
A759 SM74HC367
A702 SM74HCT251
A708 SM74HCT273
A710 SM10EL11
A765 SM10EL31
A709 SM10H102
A701 SM74HCT02
A726 SM10125.ALT
DL700 DL-1L6-15
DL701 DL-1L6-15
BUZZER BZ700 TMB-05
Delay lines to compensate CKL stop logic
VEE
VCC
_VALOUT
_READRT
EXTCTH1
EXTCTH2
VBBTRG
_SM_TRIG
SM_TRIG
TRIG
DVCKD
BC(1:199)
DD(0:15)
BTB(1:50)
BT(1:30)
SM_TRCKL
_SM_TRCKL
VALCKL
_VALCKL
BRT(0:3)
SEXTCK
CKPCAL
MA(5:21)
SMT_EN
TO FE
C-PAD-010
_RESET
MA6
RMIE
BW_R
_SWREG
_DAS
_S1IC
S1IC
_STW
_STI
TIEND
T2END
SMST0
SMST1
SMST2
_MSTAT
TILD
TICK
TP700
-12V_TB
NORES


LeCroy CORPORATION
MODEL : 900022
TIMEBASE (8/8)
DWG NO: 900022-S1
SH: 56 of 56
ECO: 1000
ENABLE THIS TRIGGER LATCH FIRST THEN THE SMT412
THE CONNECTIONS BETWEEN THE FLIP FLOPS MUST BE SHORT
TRIG
TP710
SMT_EN
U338 SM10EL11
U361 SM10EL31
U360 SM10EL31
U364 SM10EL57
U703 SM74HCT02
A757 SM74HCT74
TRIGEN FROM MTB411
TRIGEN
BCK
_OCT_EN
Ins 6.5" length
50 ohm line 0.014" Wide
0.005" wide line
TEST LINE 8 INCHES SM_COAX_RG178B_U
J20A
J20B
J10A
J10B
J40A
J40B
J50A
J50B
SM_TRIG
_SM_TRIG
DC_TRCKL
_DC_TRCKL
FAST_DC_TRIG
TRIG_COM(1:17)
BTB(1:50)
BC(1:199)
HOLE_137NP
DR2
VCC
VEE
SM.01uFS

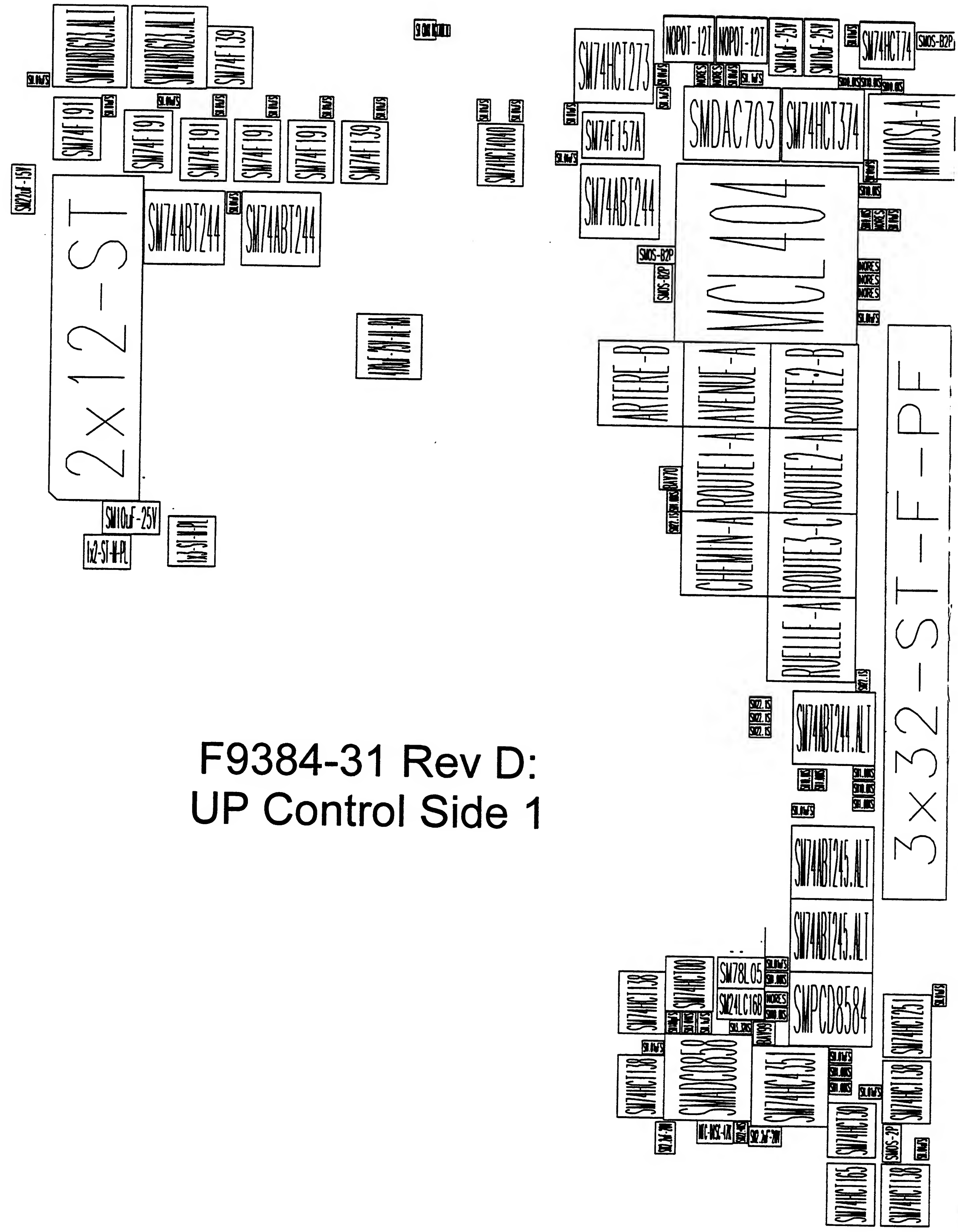


F9384-31 Rev D:
UP Control Side 1

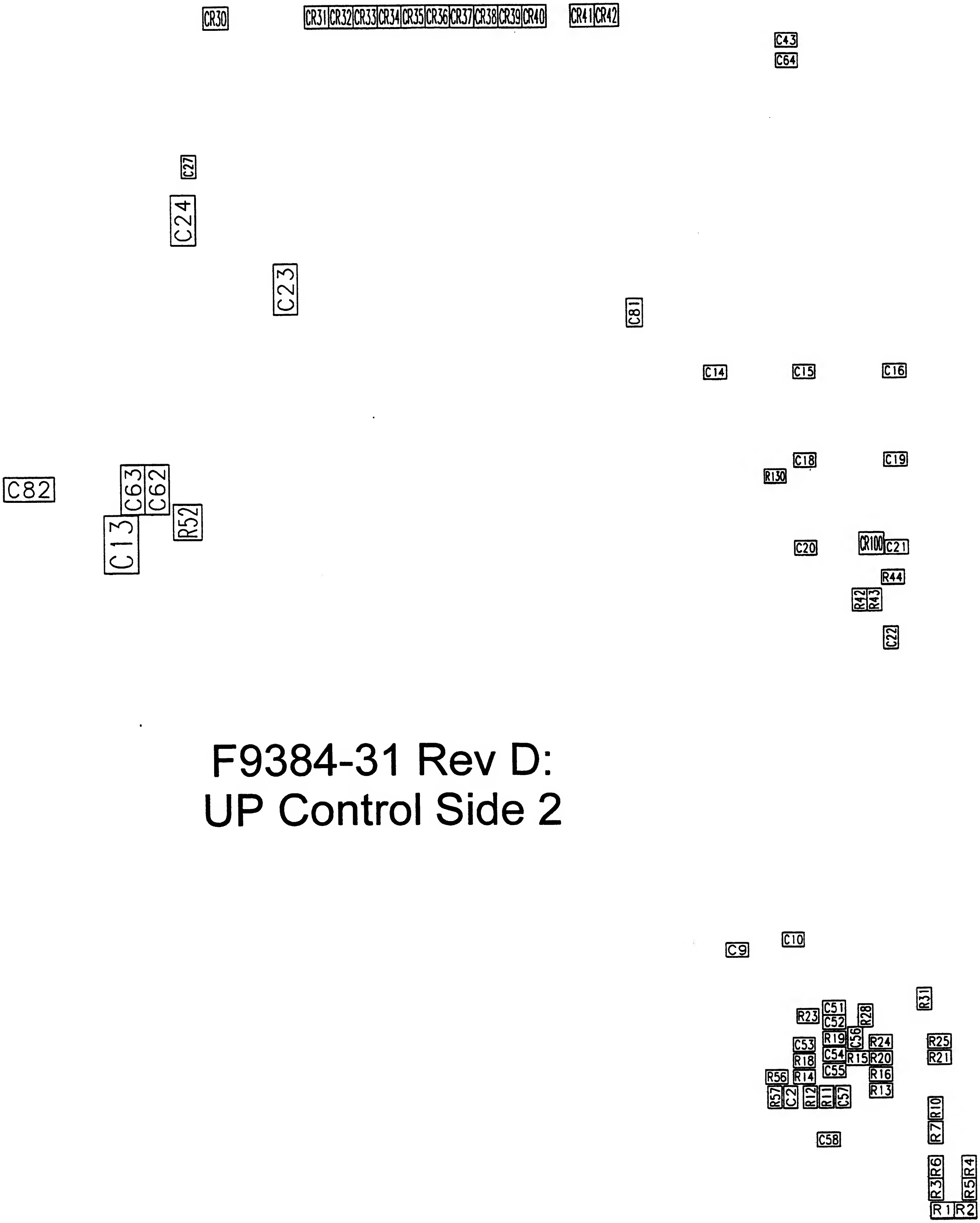


F9384-31 Rev D:
UP Control Side 1

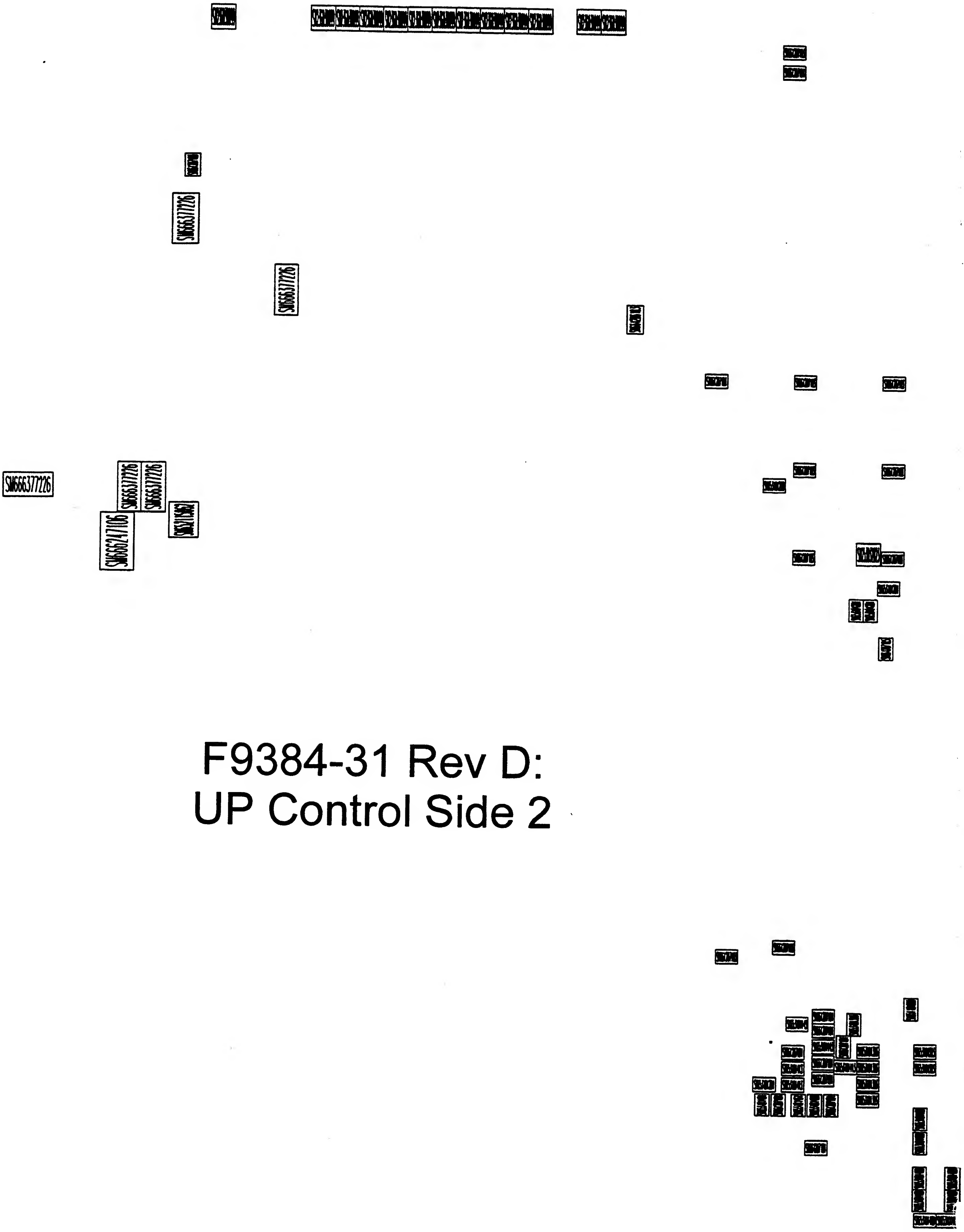
Schematics, Layouts



F9384-31 Rev D:
UP Control Side 1



F9384-31 Rev D:
UP Control Side 2



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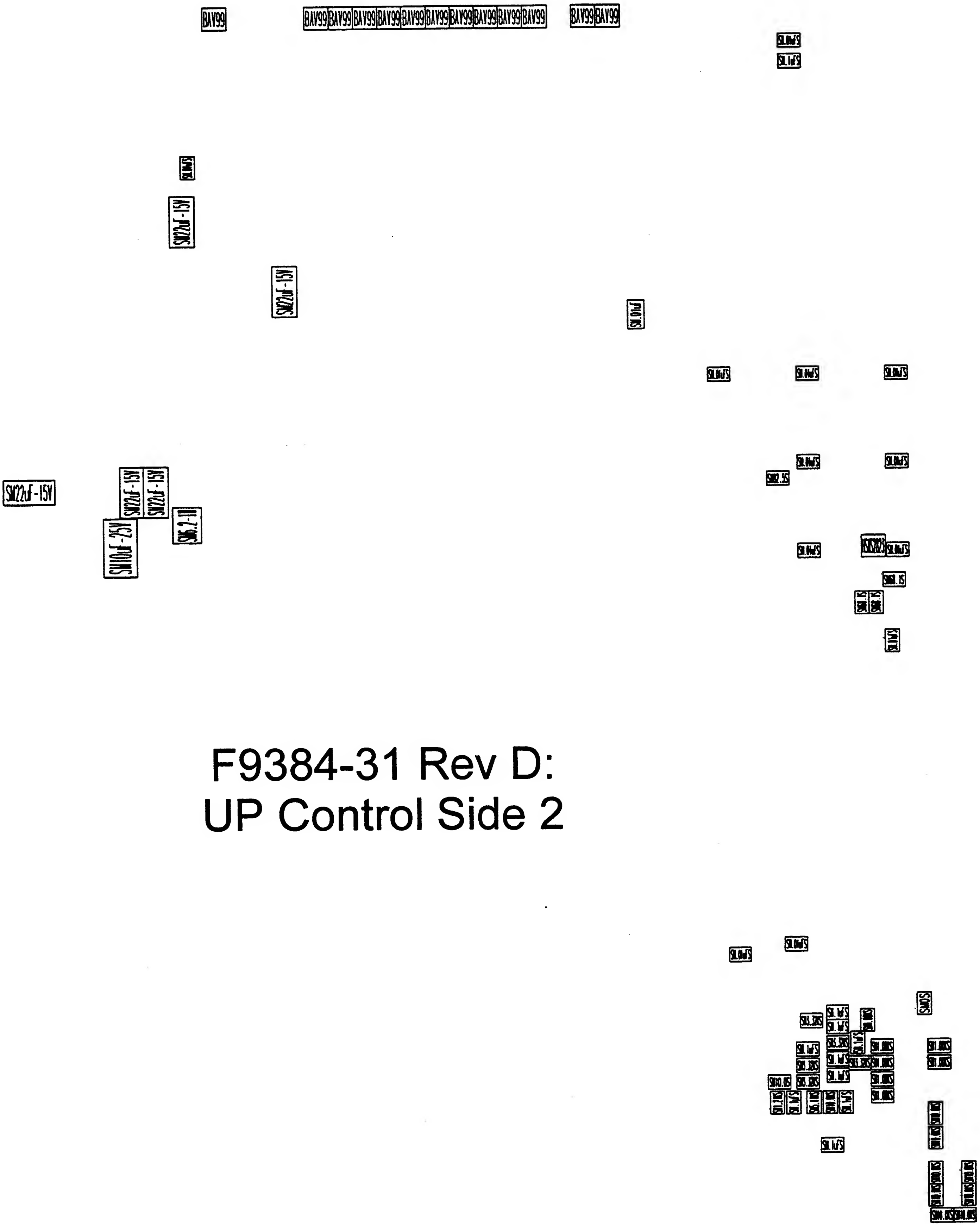
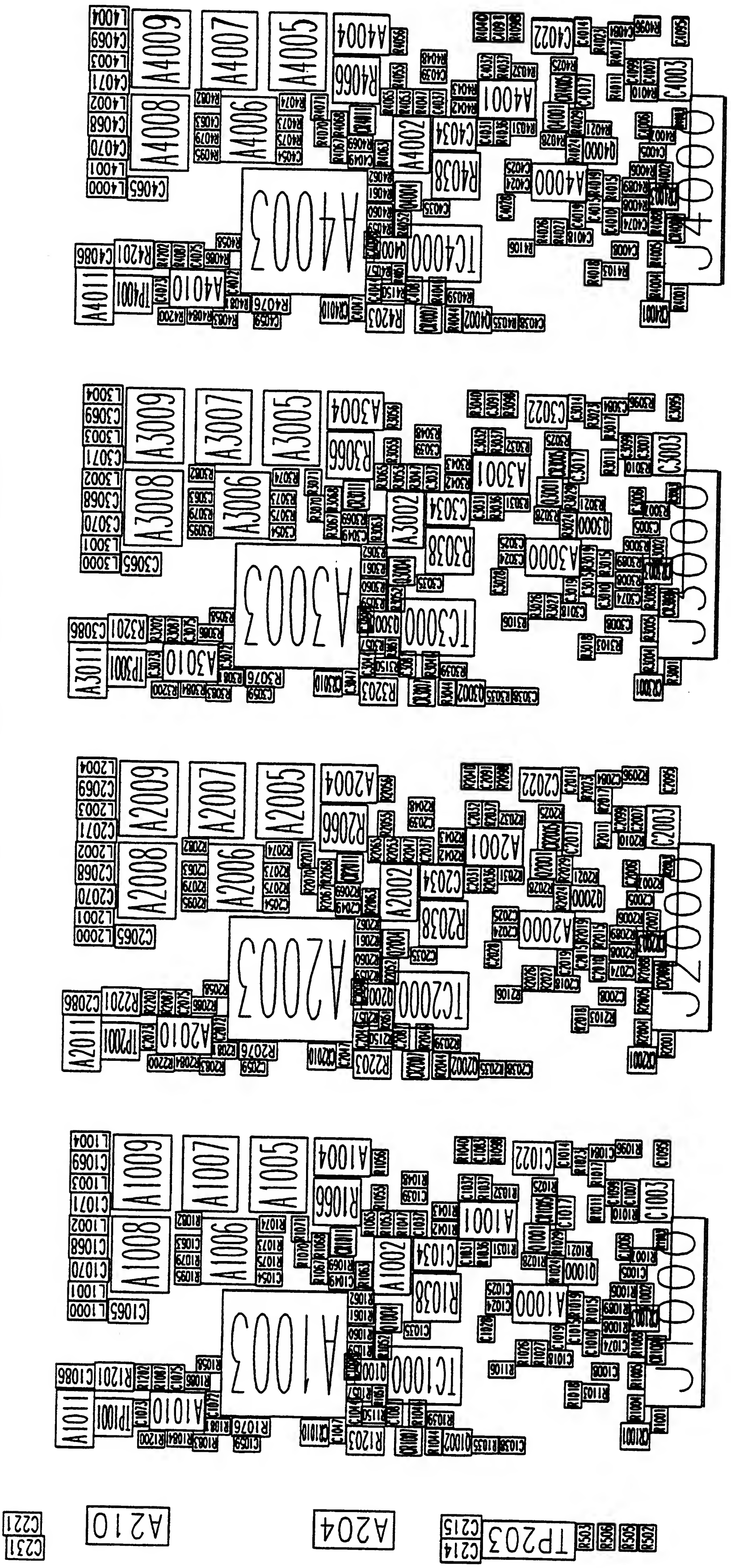
UP Control Side 2

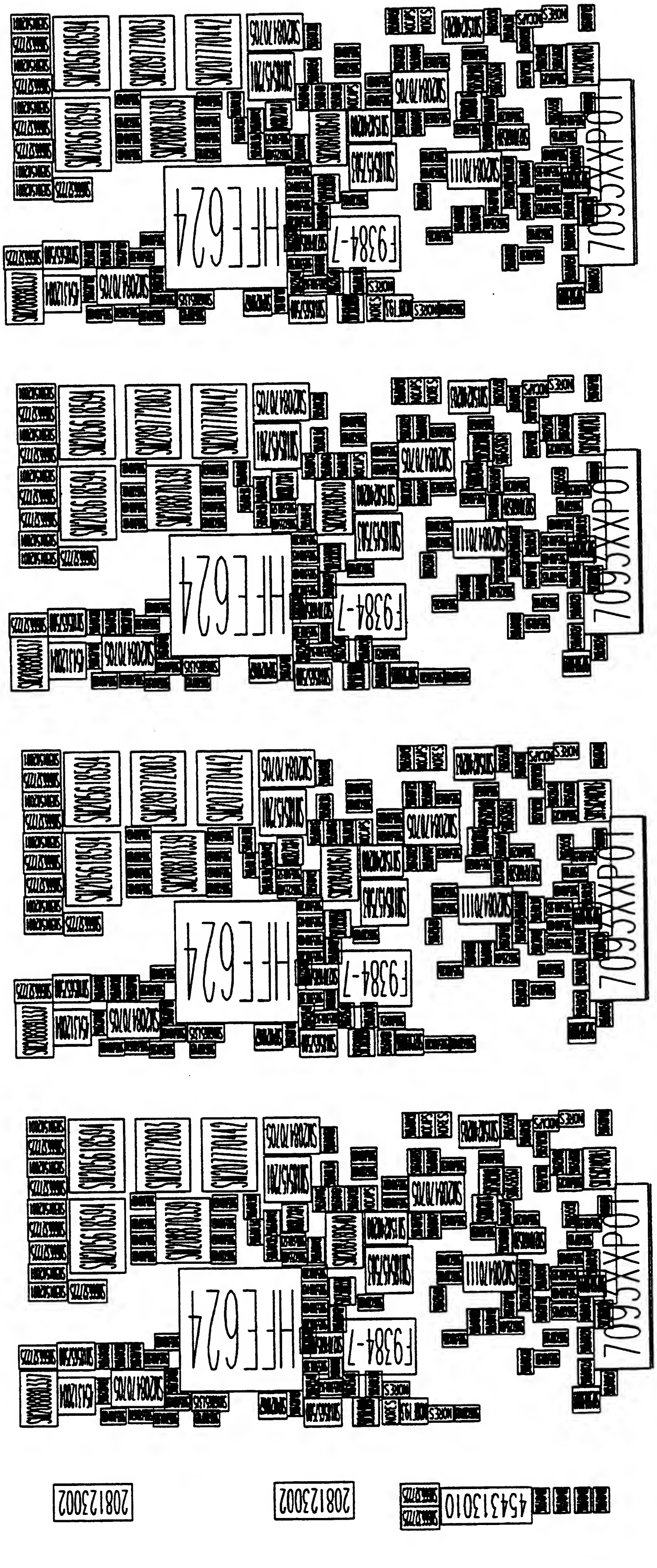


F9384-31 Rev D:
UP Control Side 2

F9384-31 Rev D:
Front End Channels Side 1



F9384-31 Rev D:
Front End Channels Side 1



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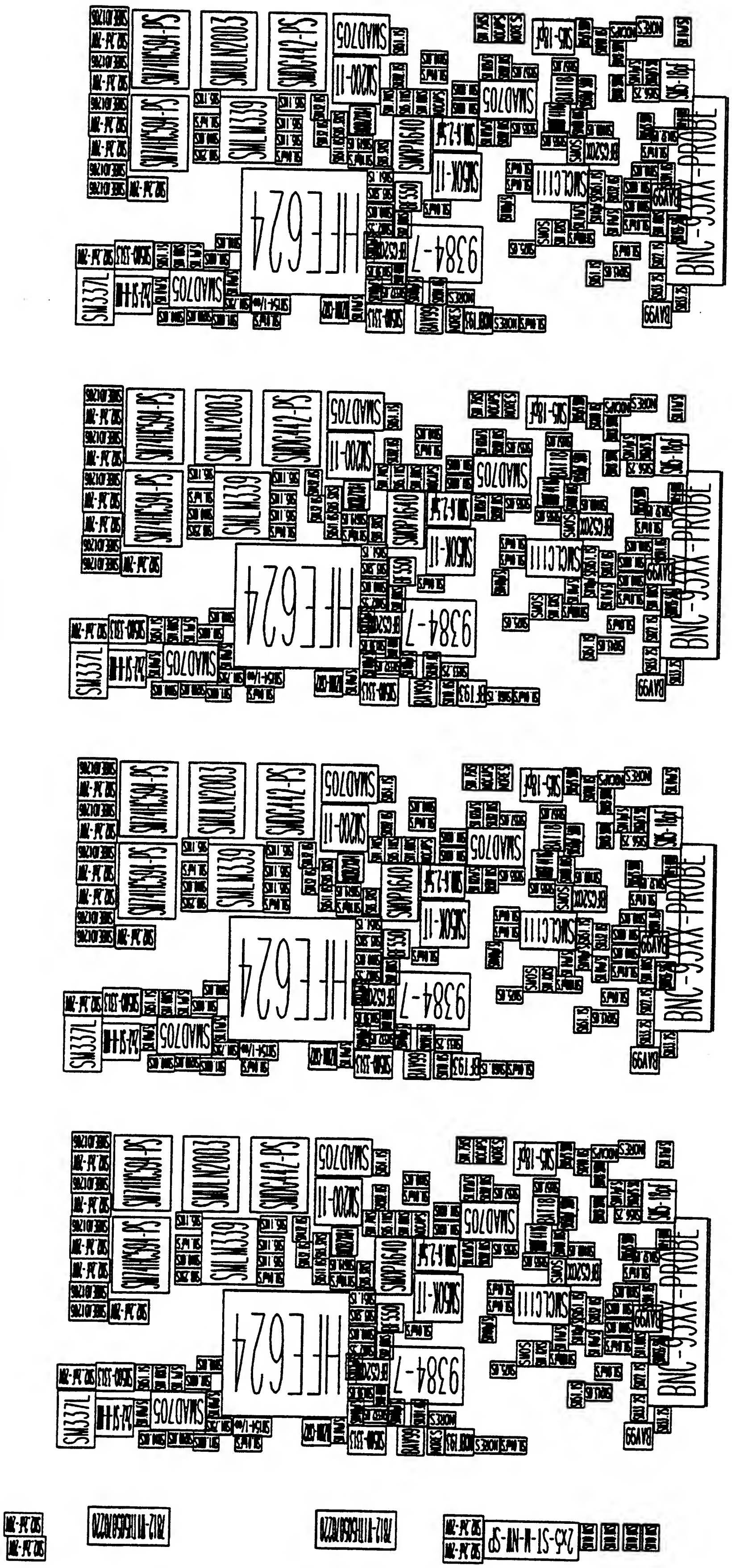
Front End Channels Side 1



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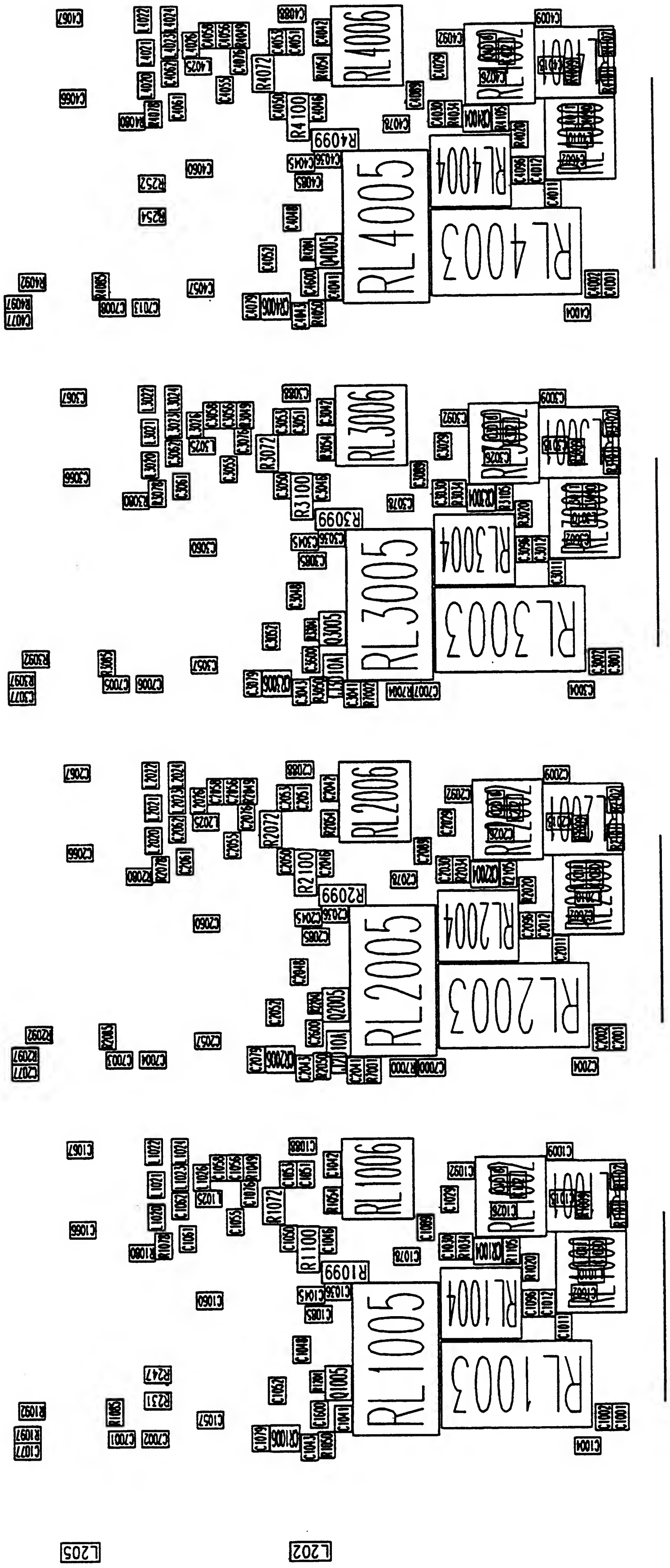
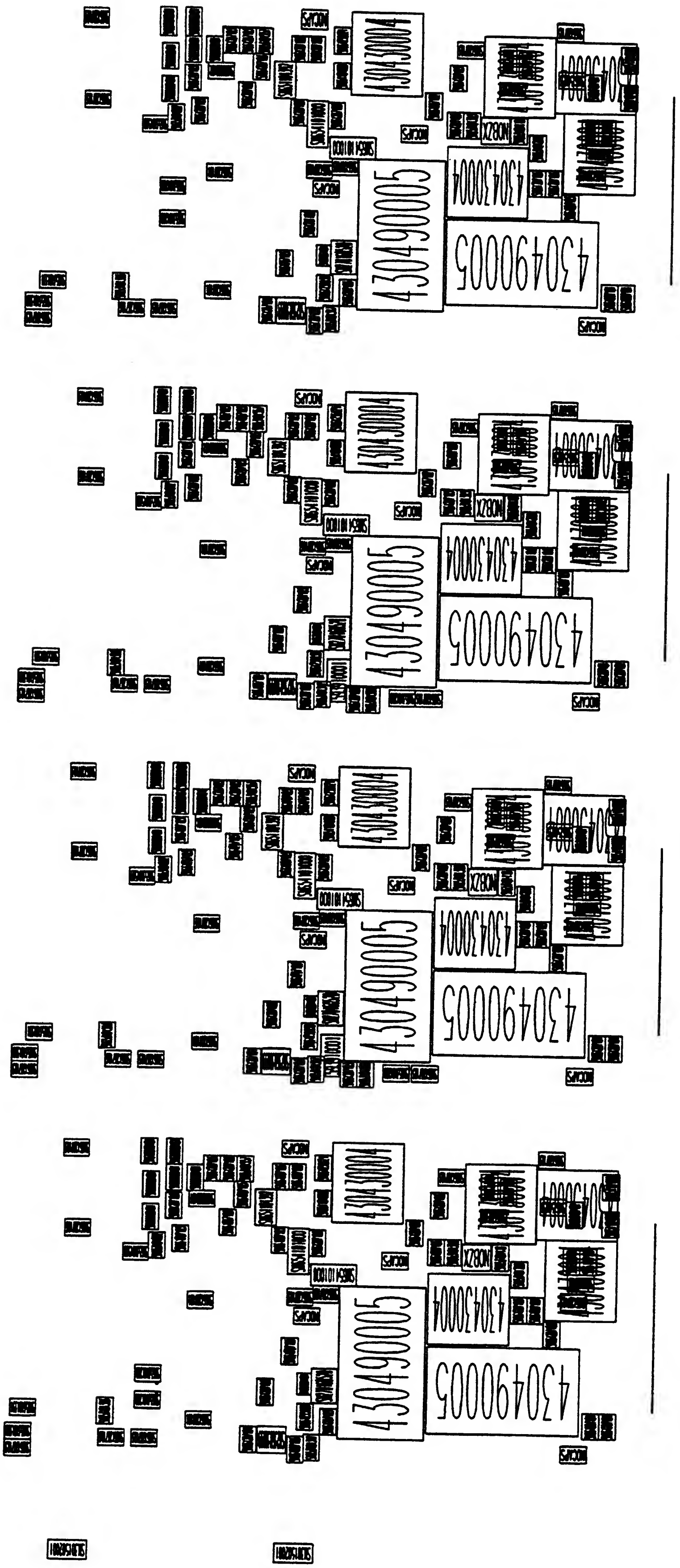
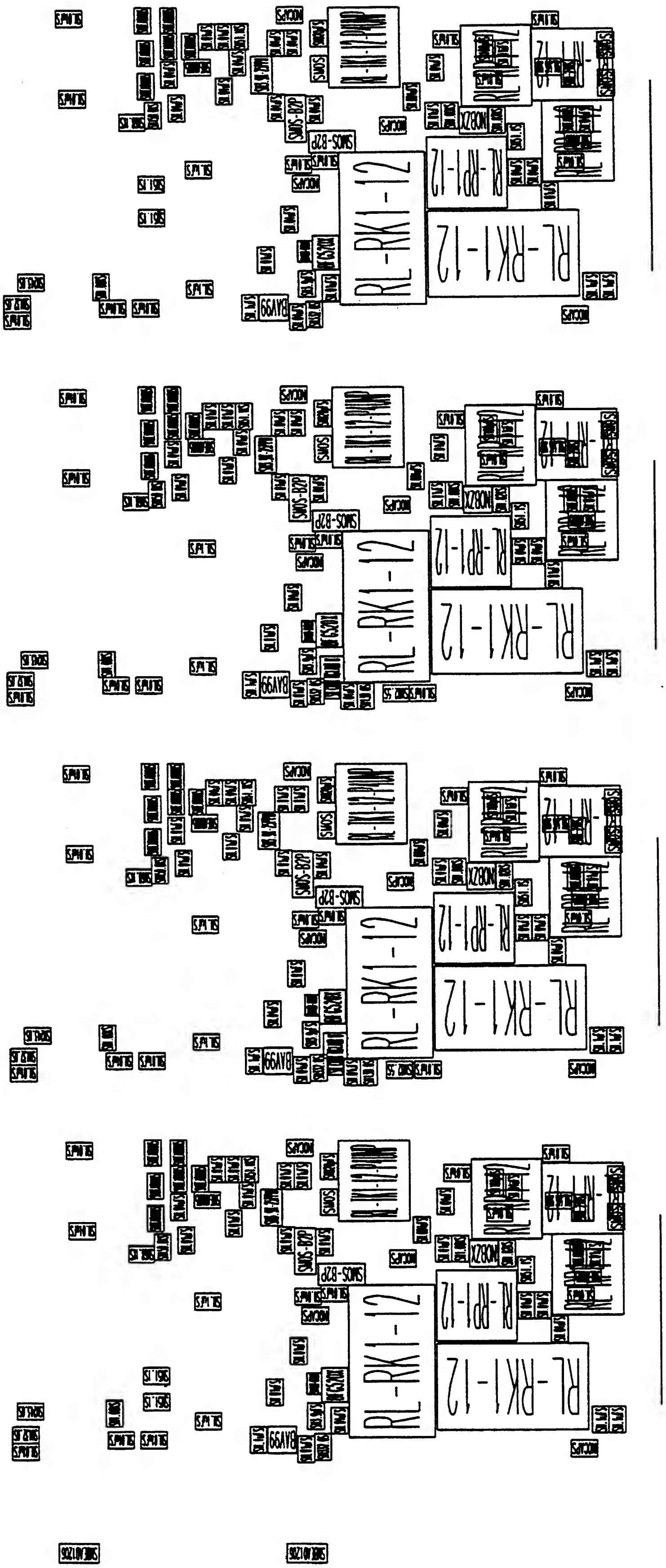
Front End Channels Side 2

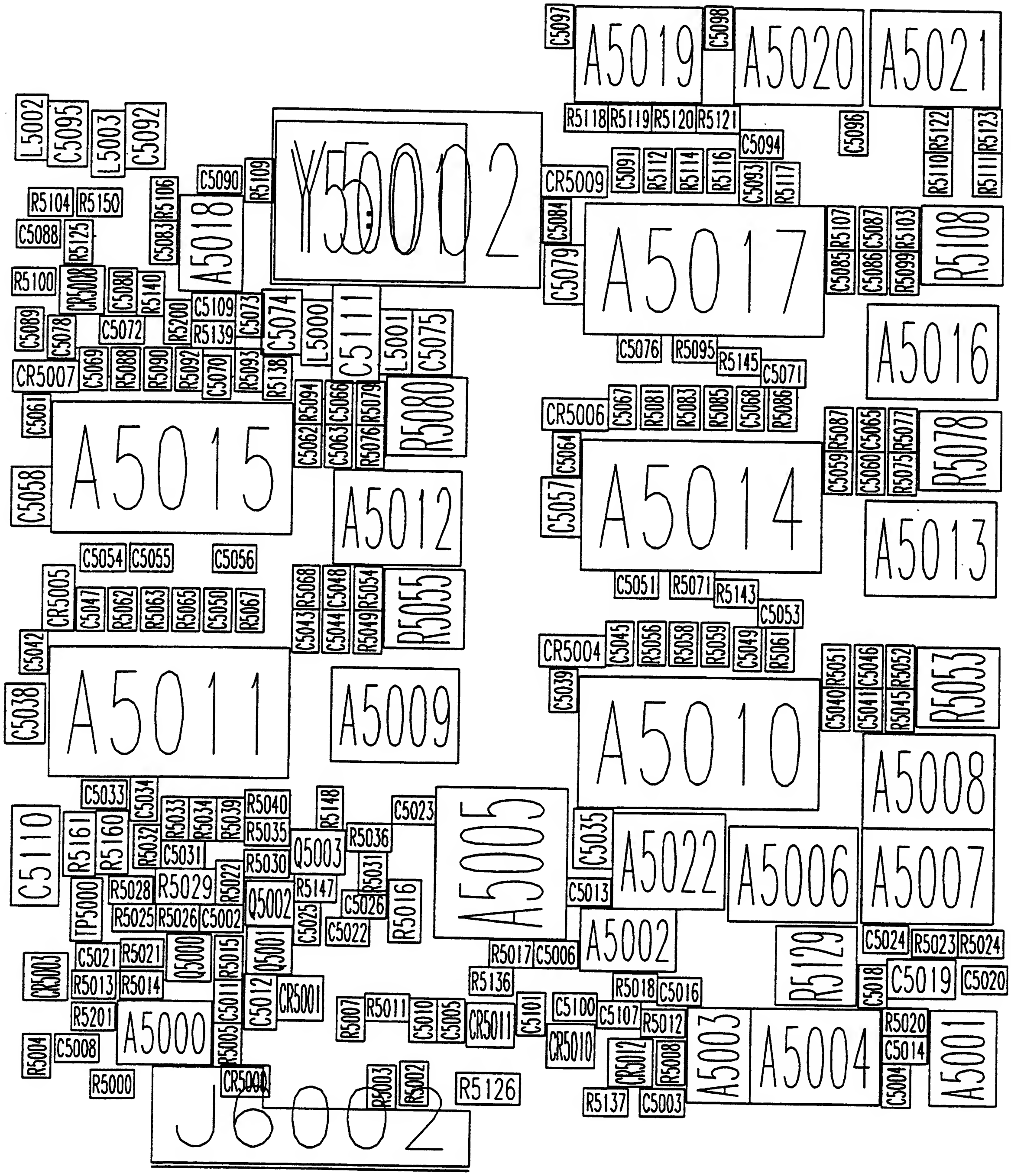


F9384-31 Rev D: Front End Channels Side 2



F9384-31 Rev D: Front End Channels Side 2





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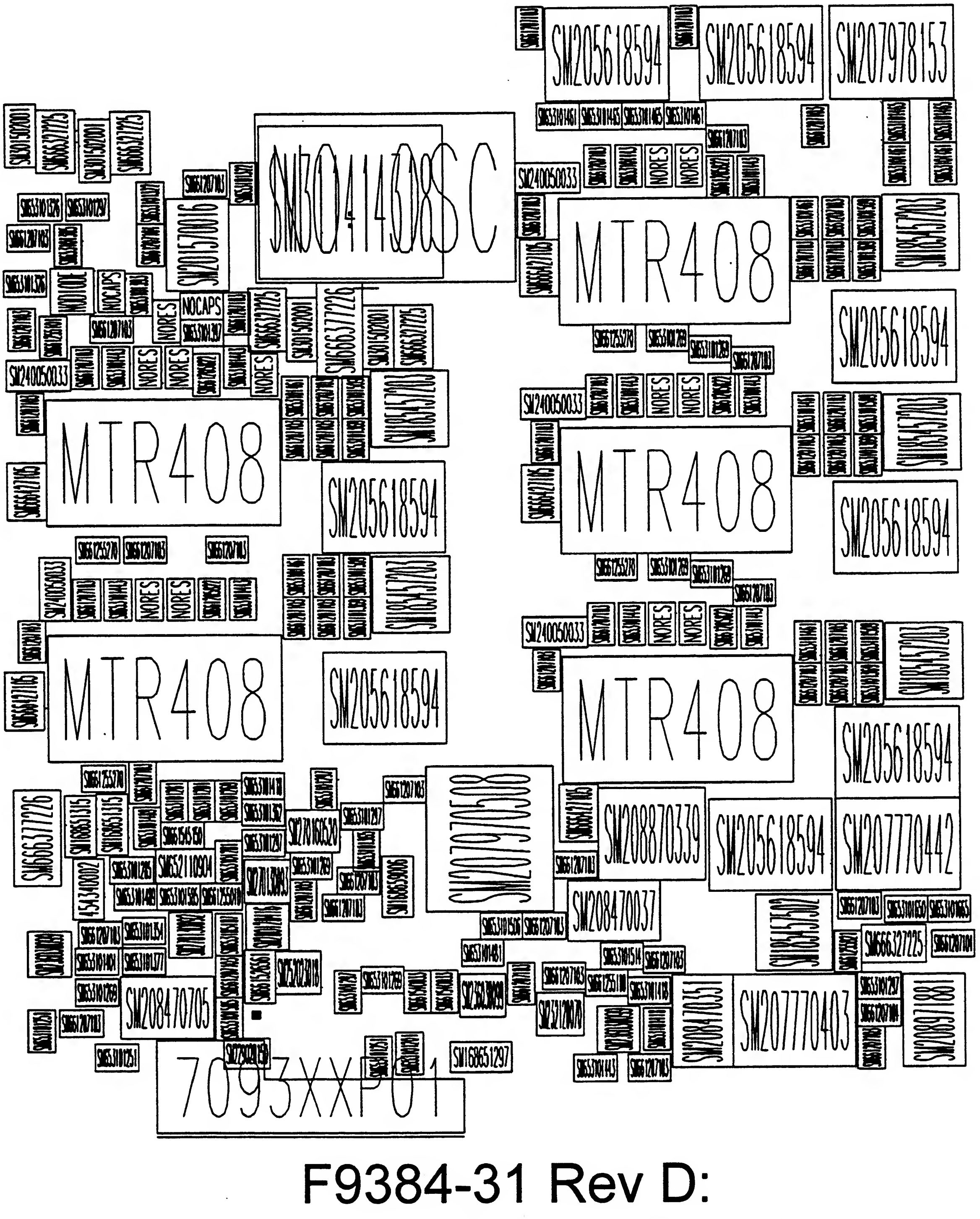
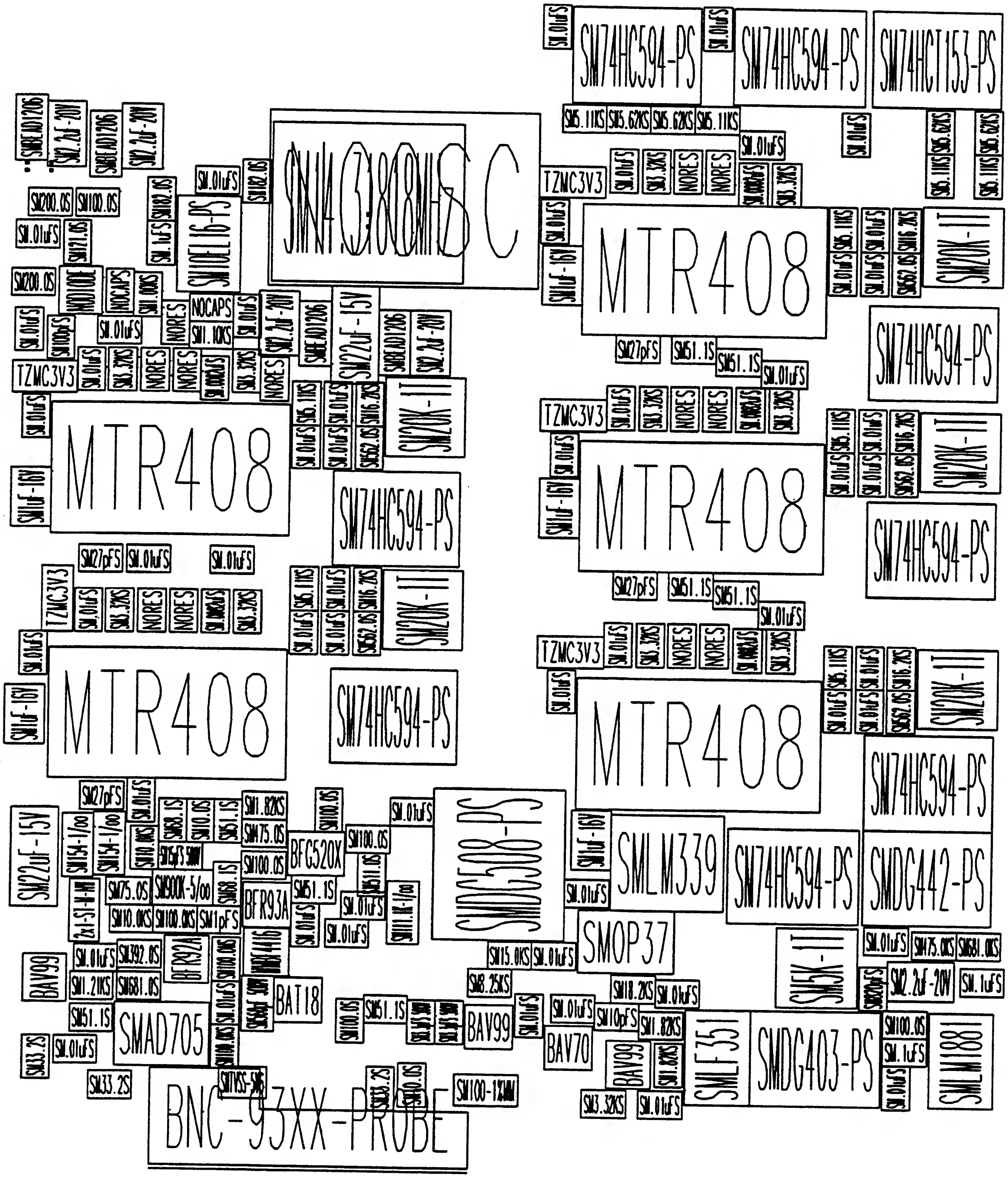
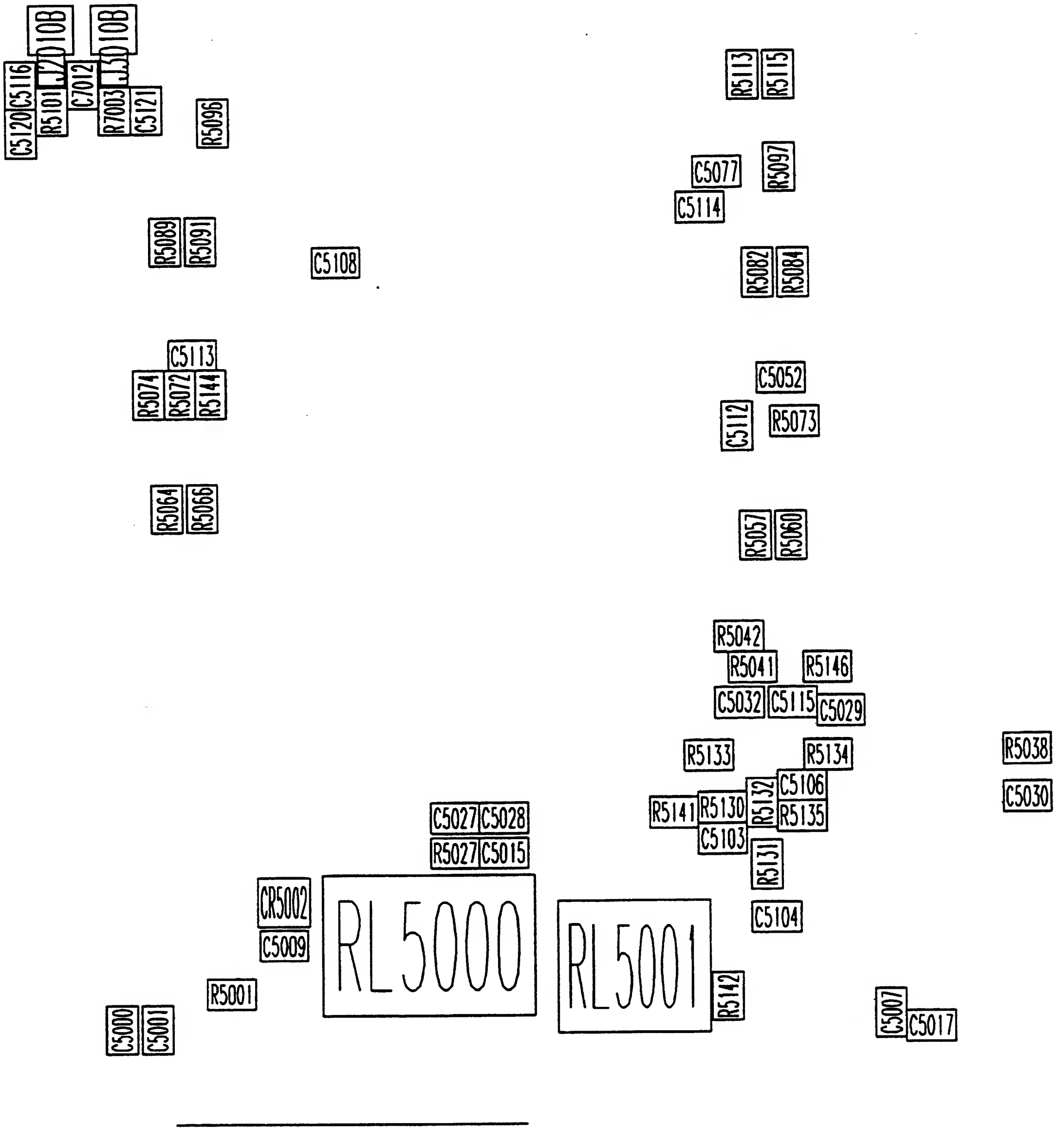
Front End Trigger Side 1



F9384-31 Rev D:
Front End Trigger Side 1



F9384-31 Rev D:
Front End Trigger Side 1



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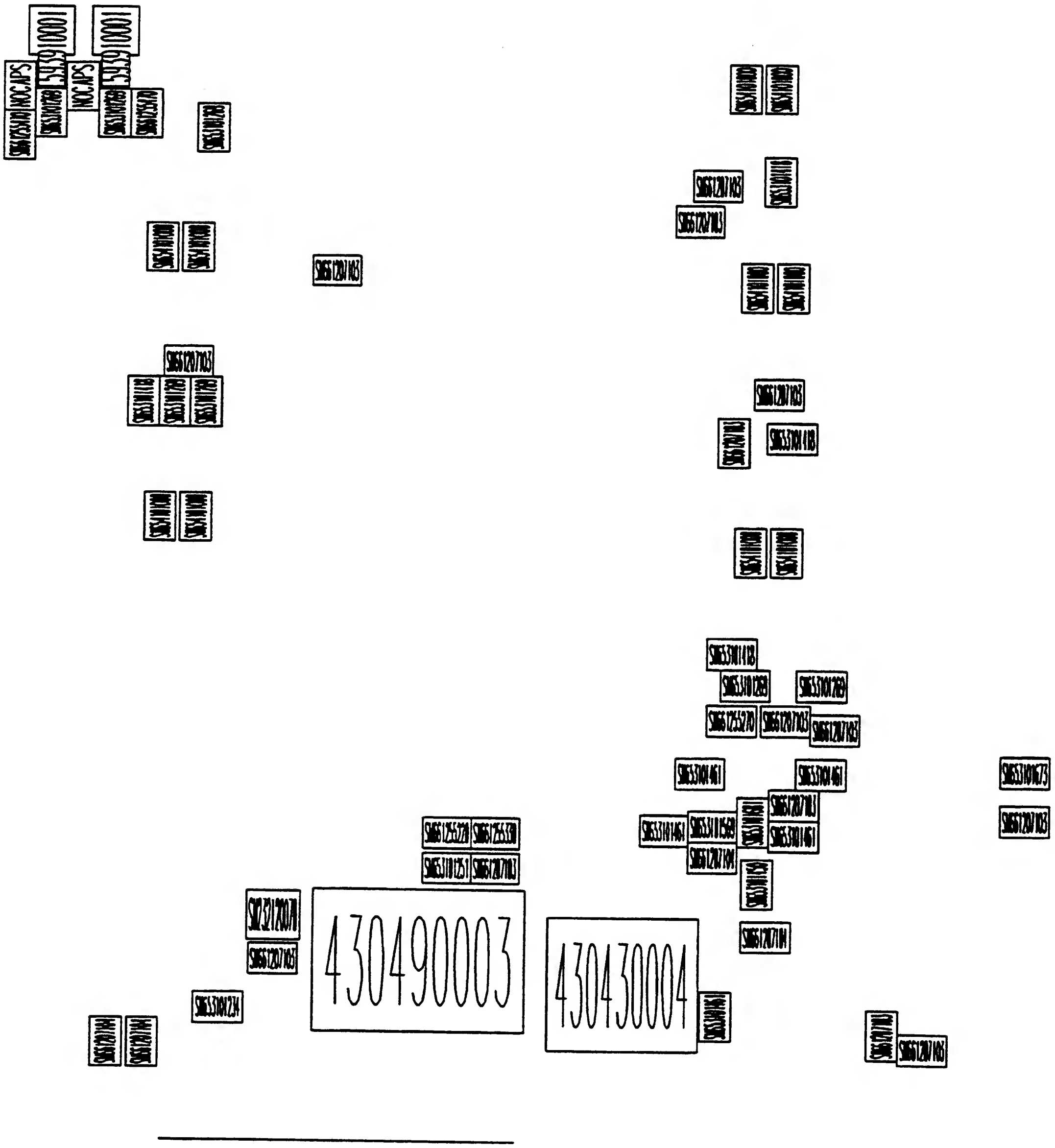
Front End Trigger Side 2



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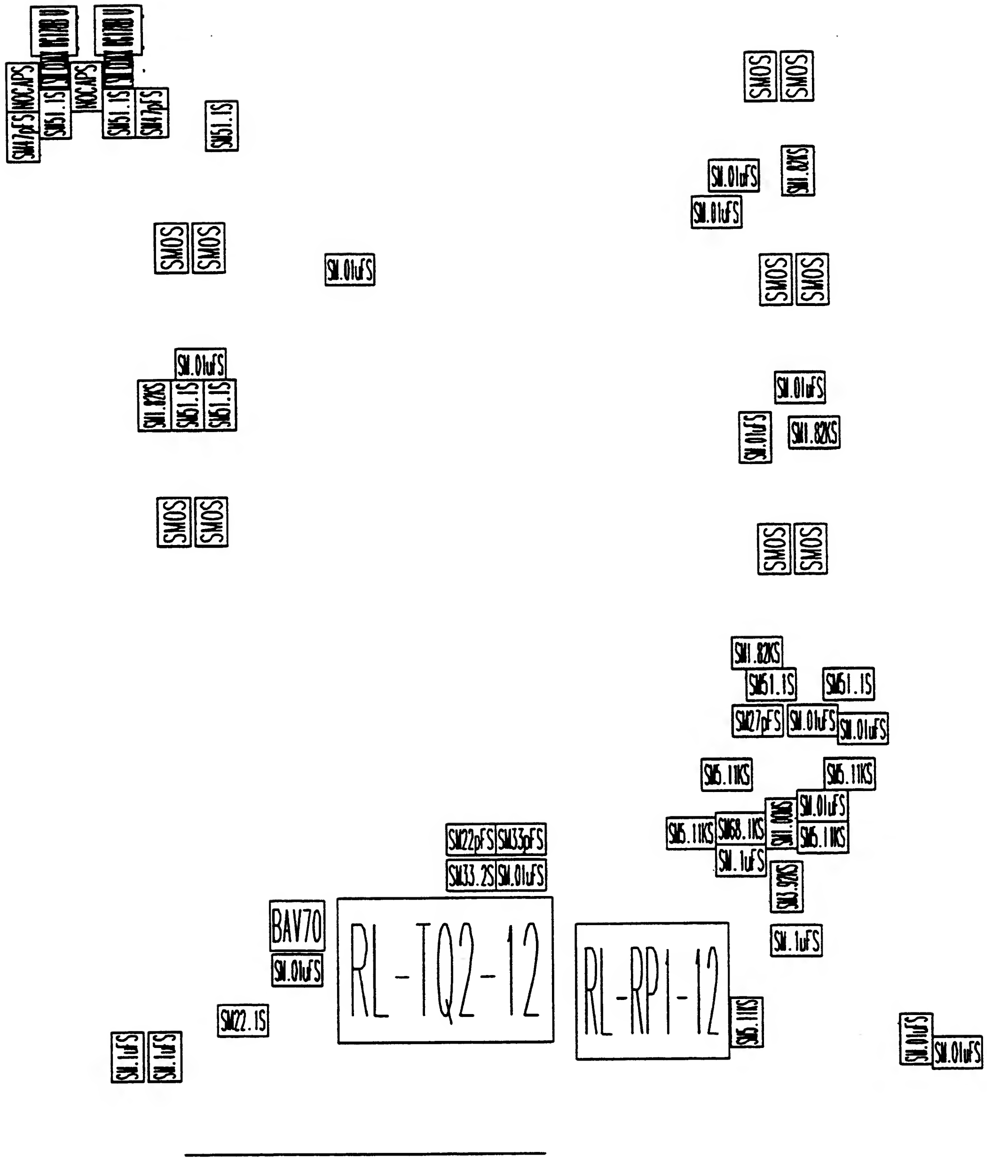
Front End Trigger Side 2



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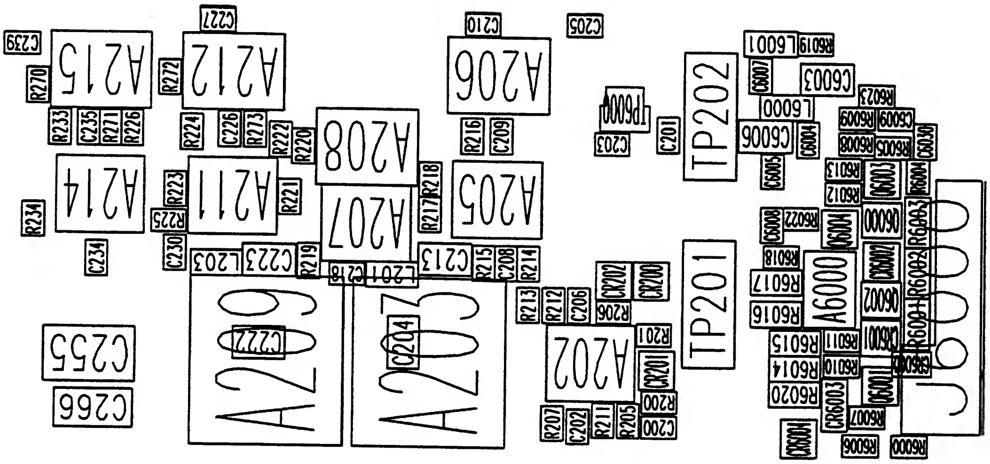
Front End Trigger Side 2



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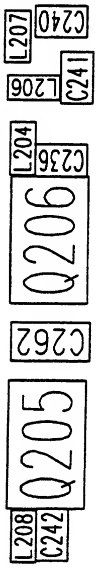
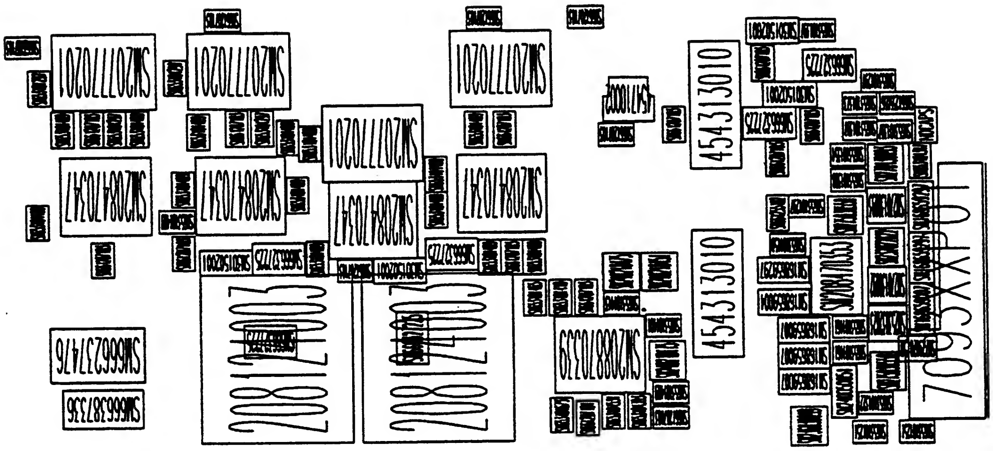
Front End Side 1





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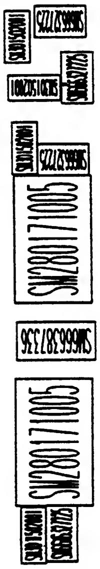
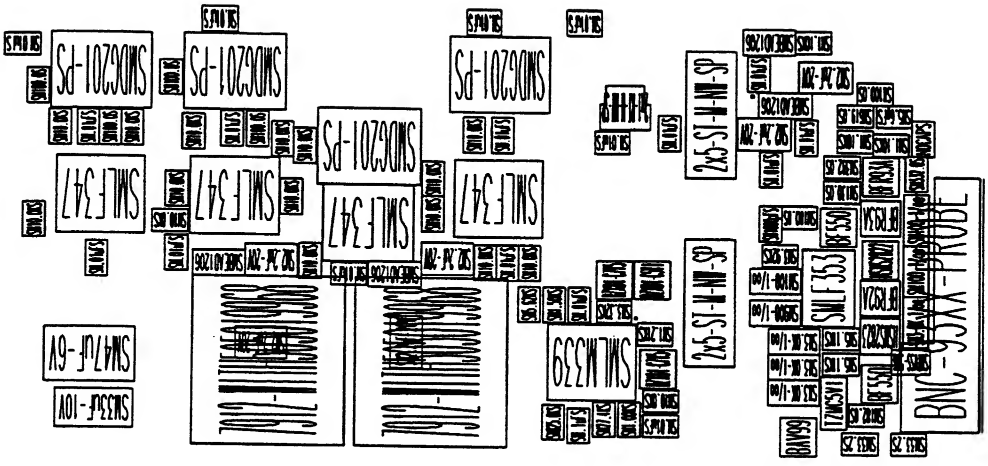
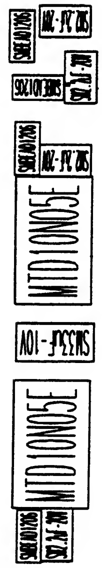
Front End Side 1







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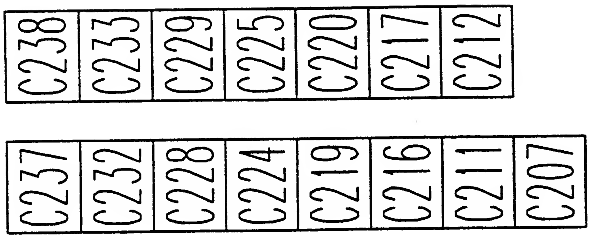
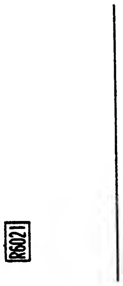
Front End Side 1





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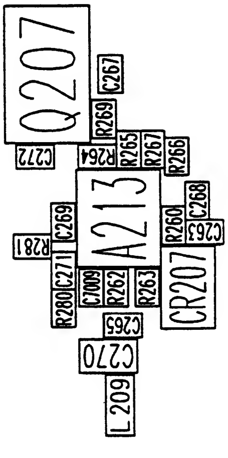

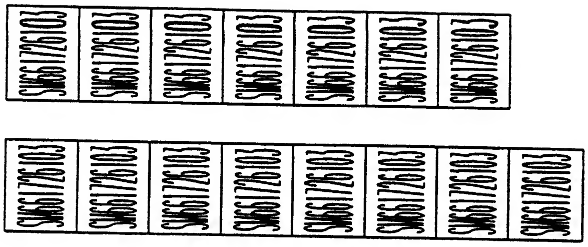

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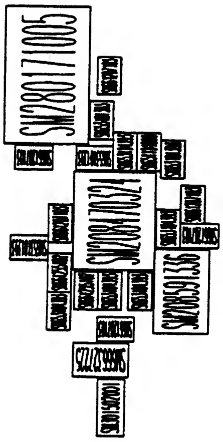
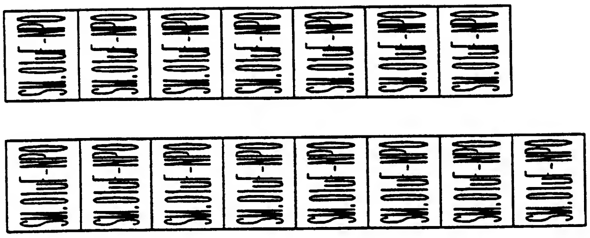
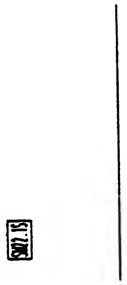
Front End Side 2







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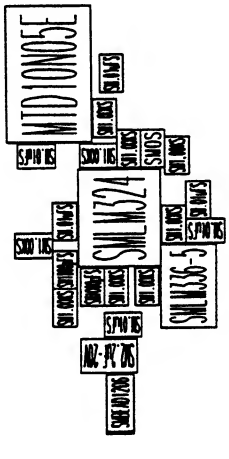
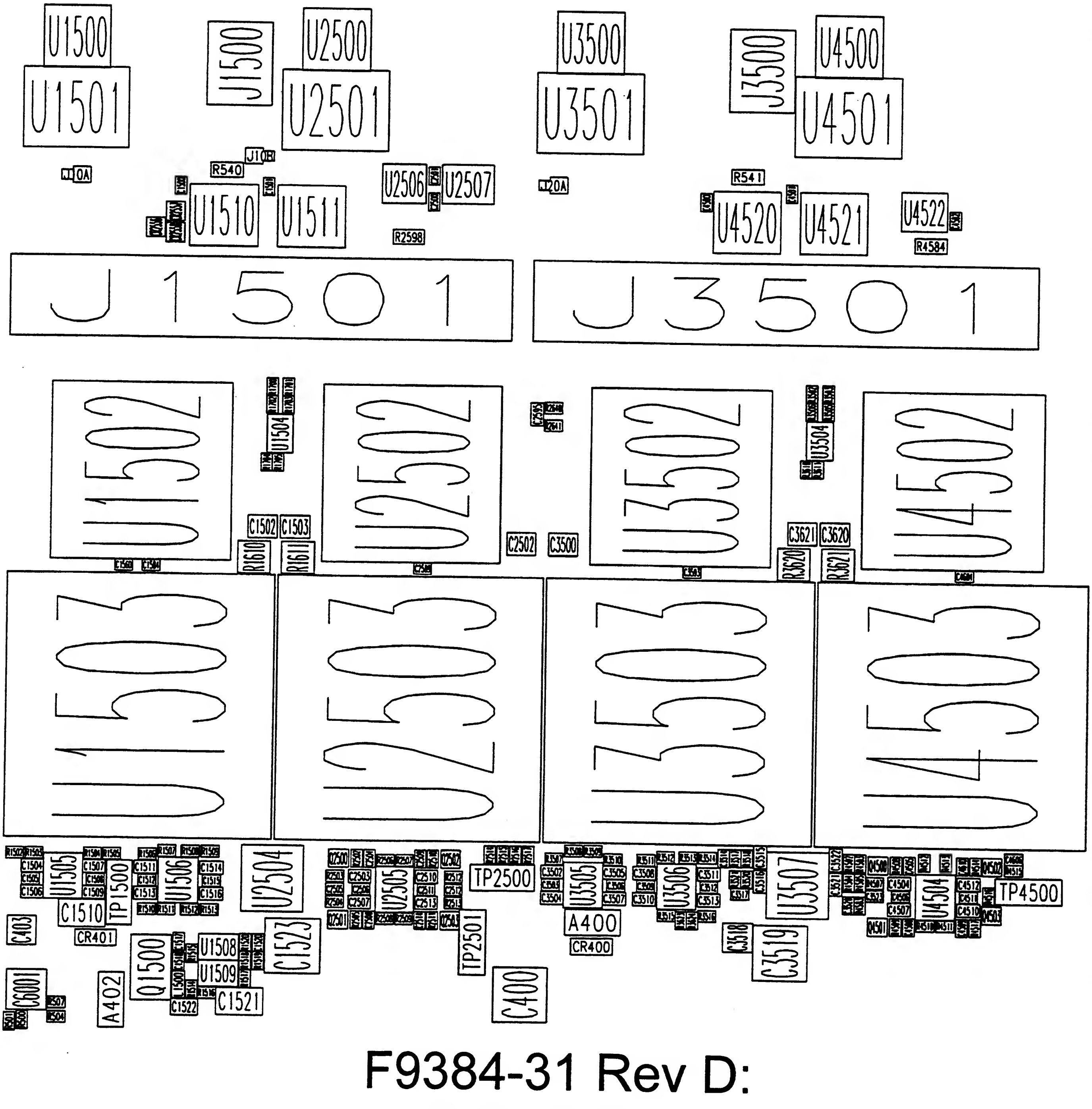
Front End Side 2





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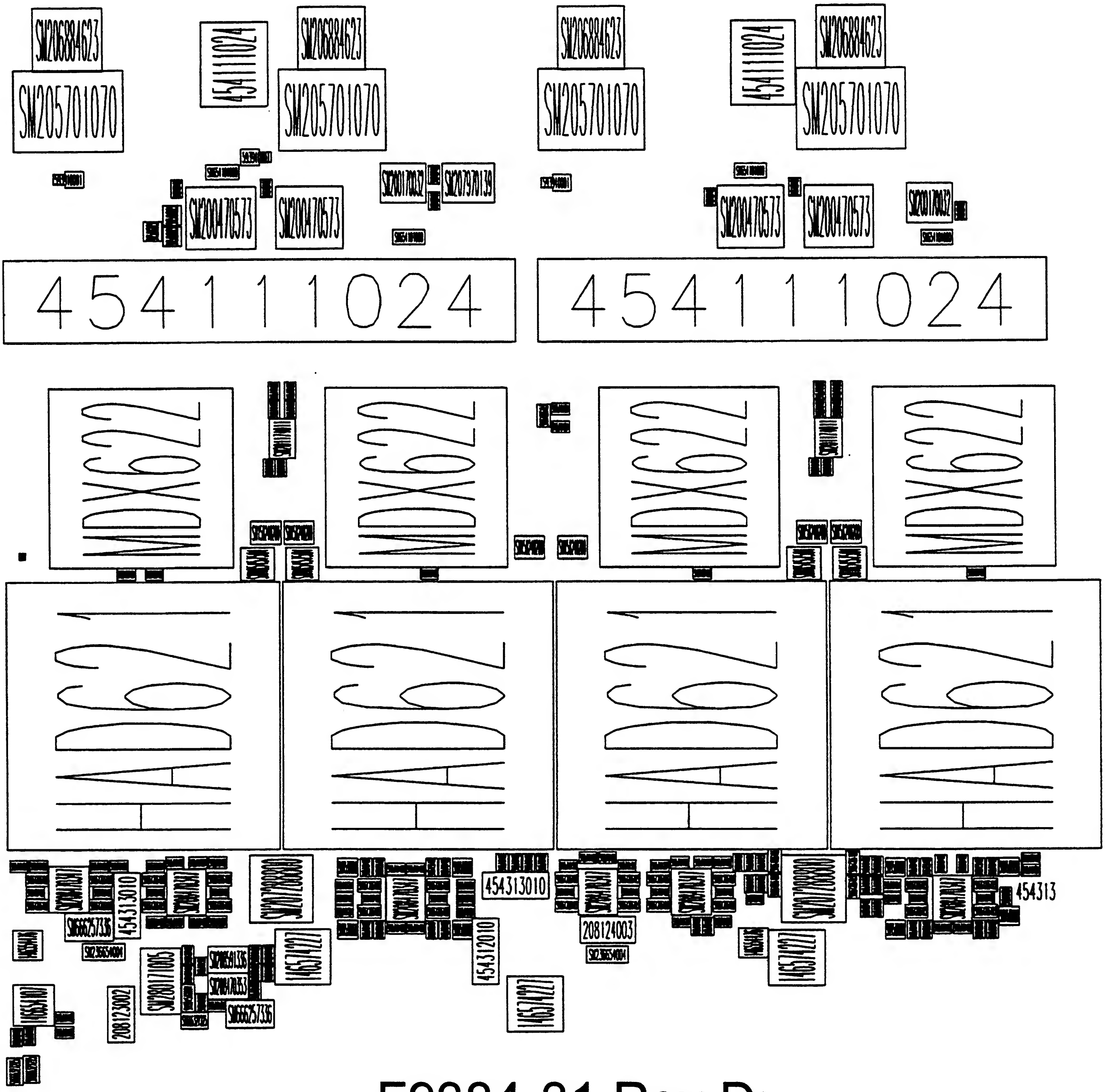

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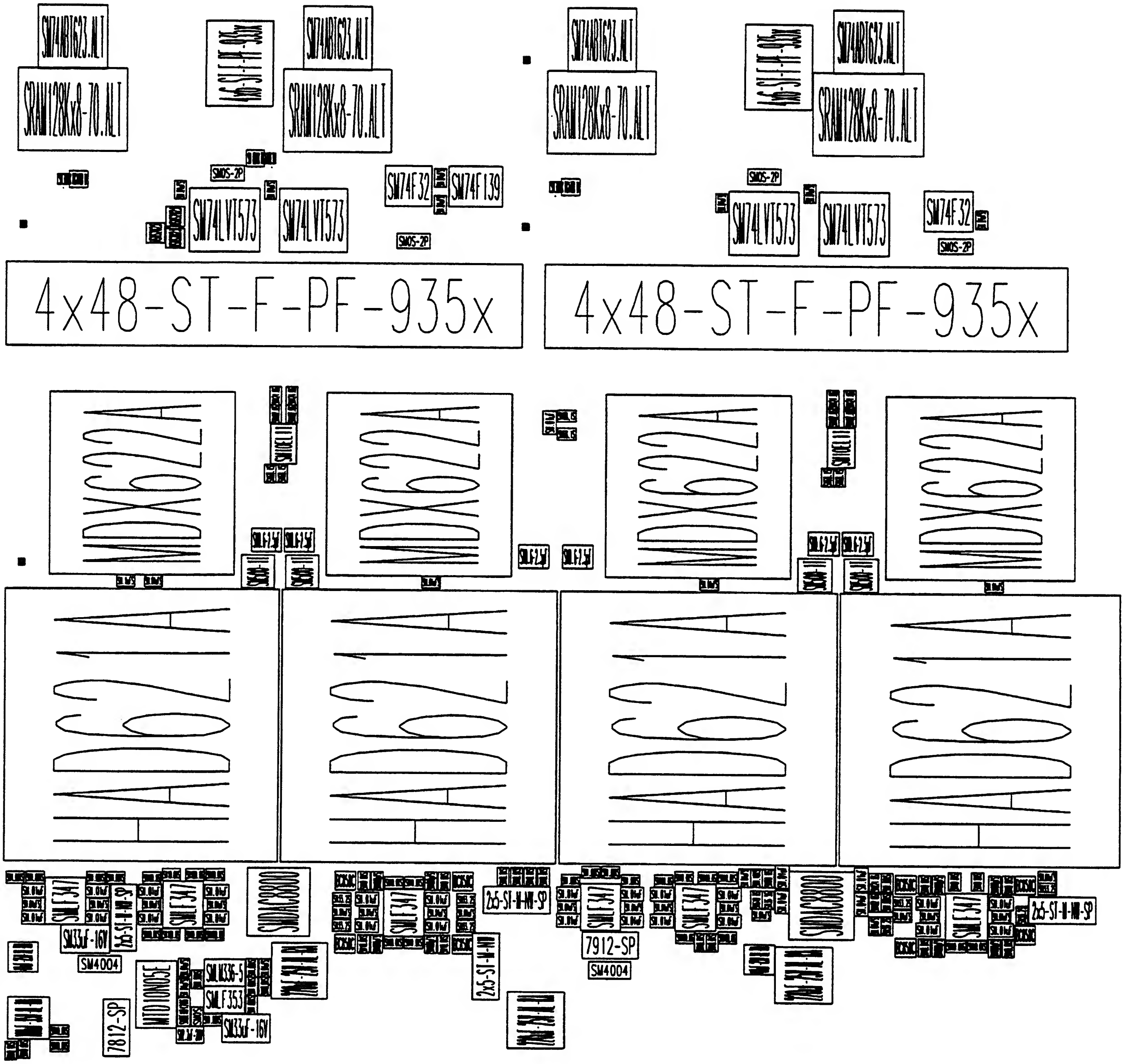

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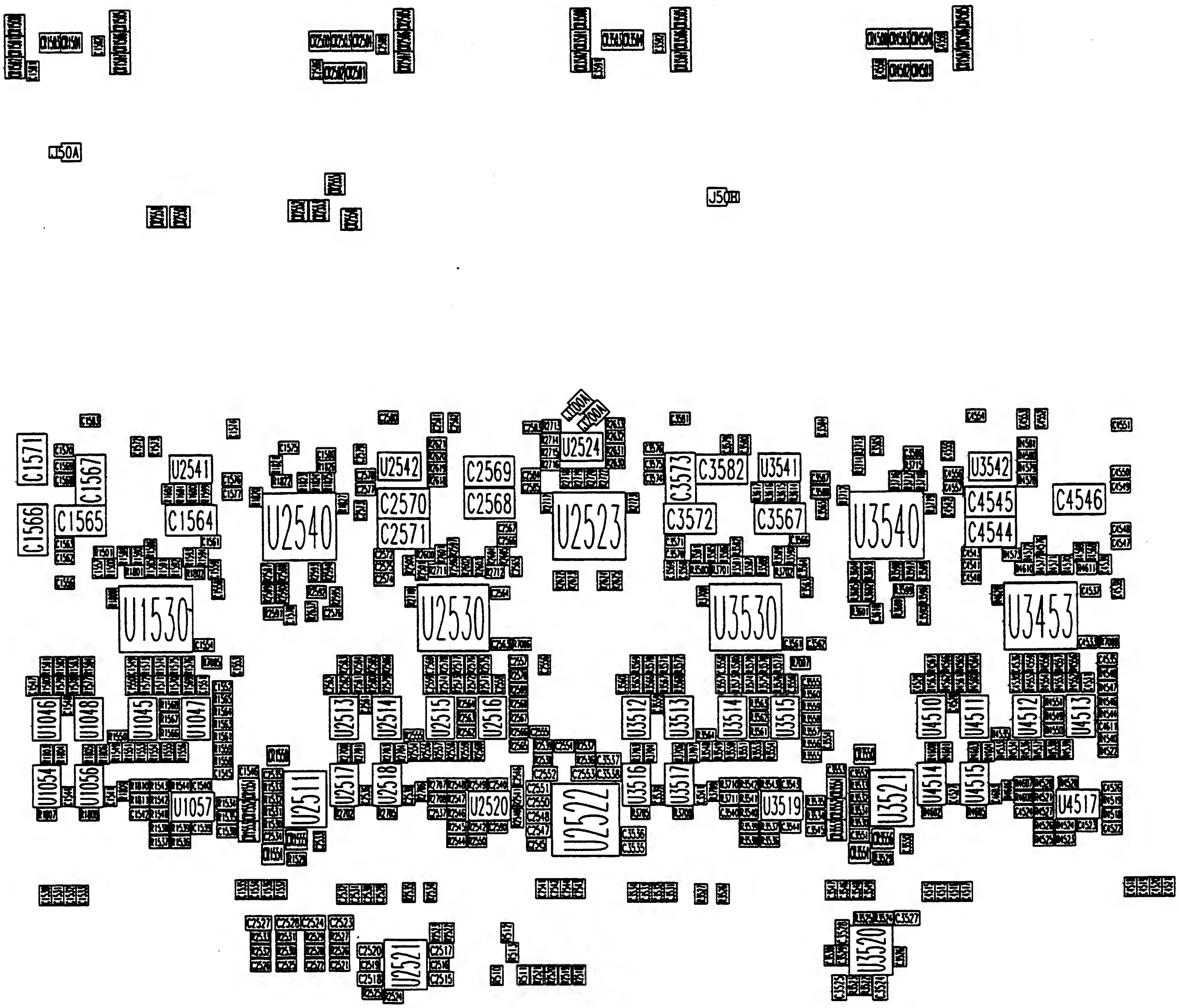
ADC Side 1



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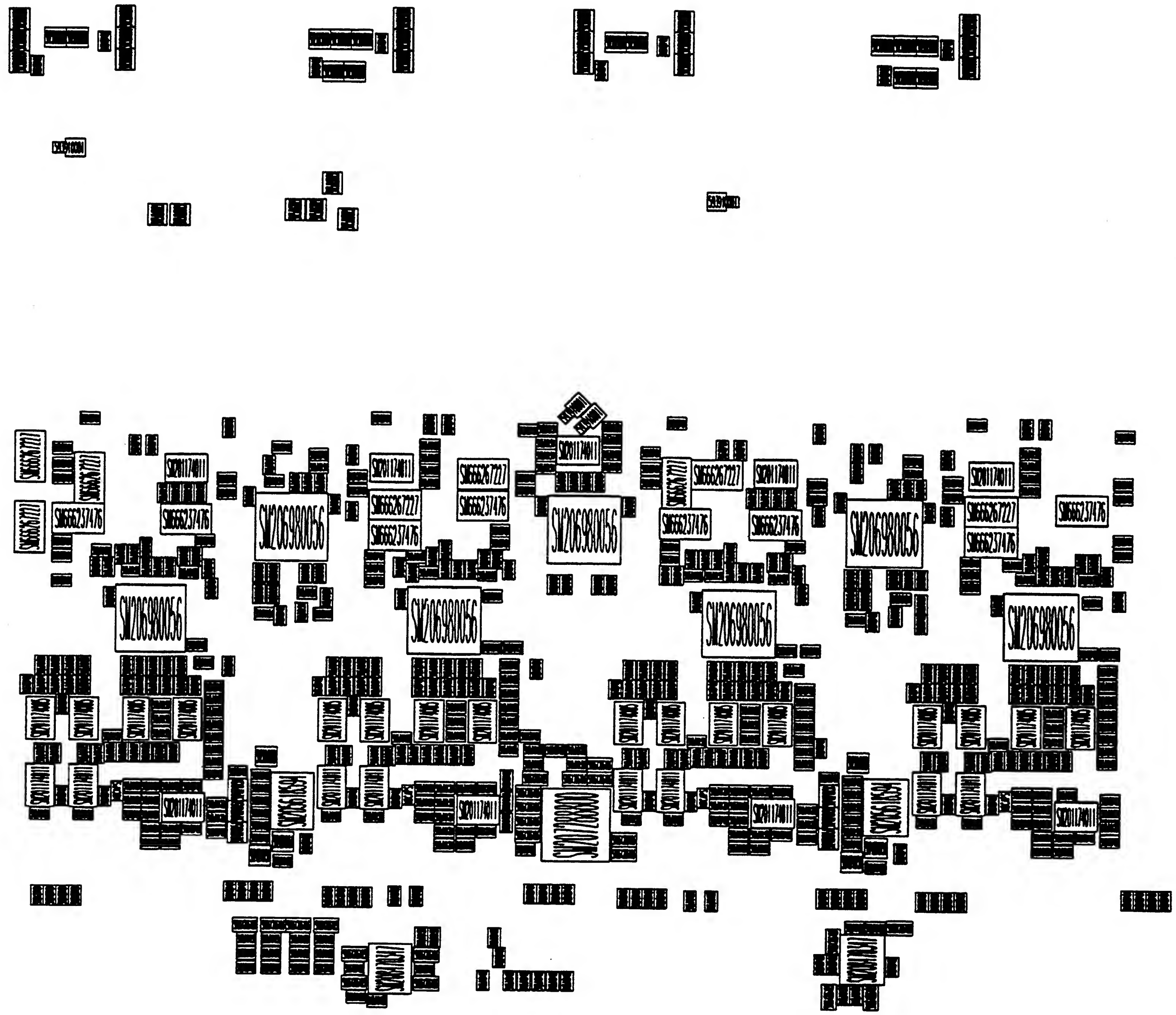
ADC Side 2



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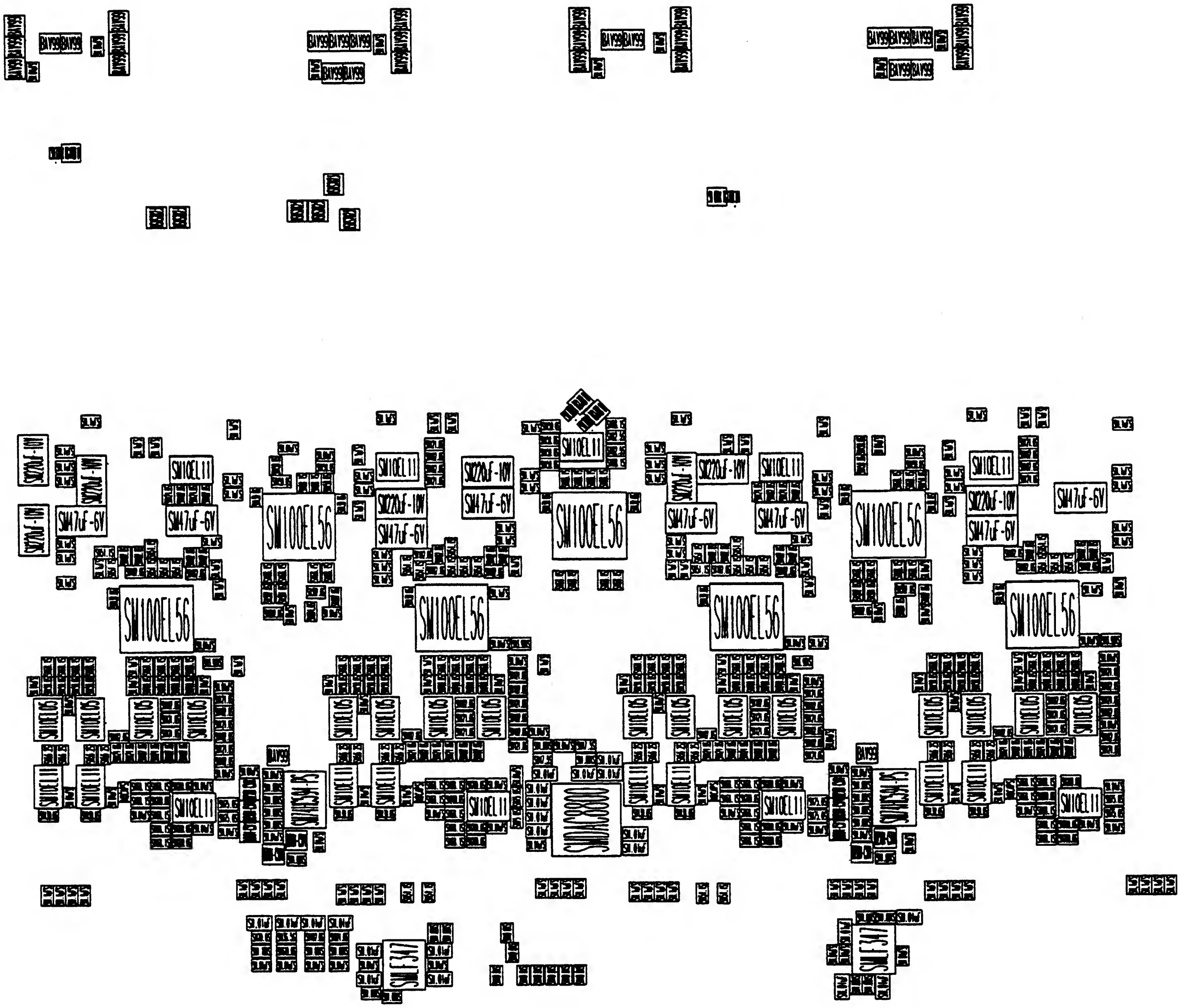
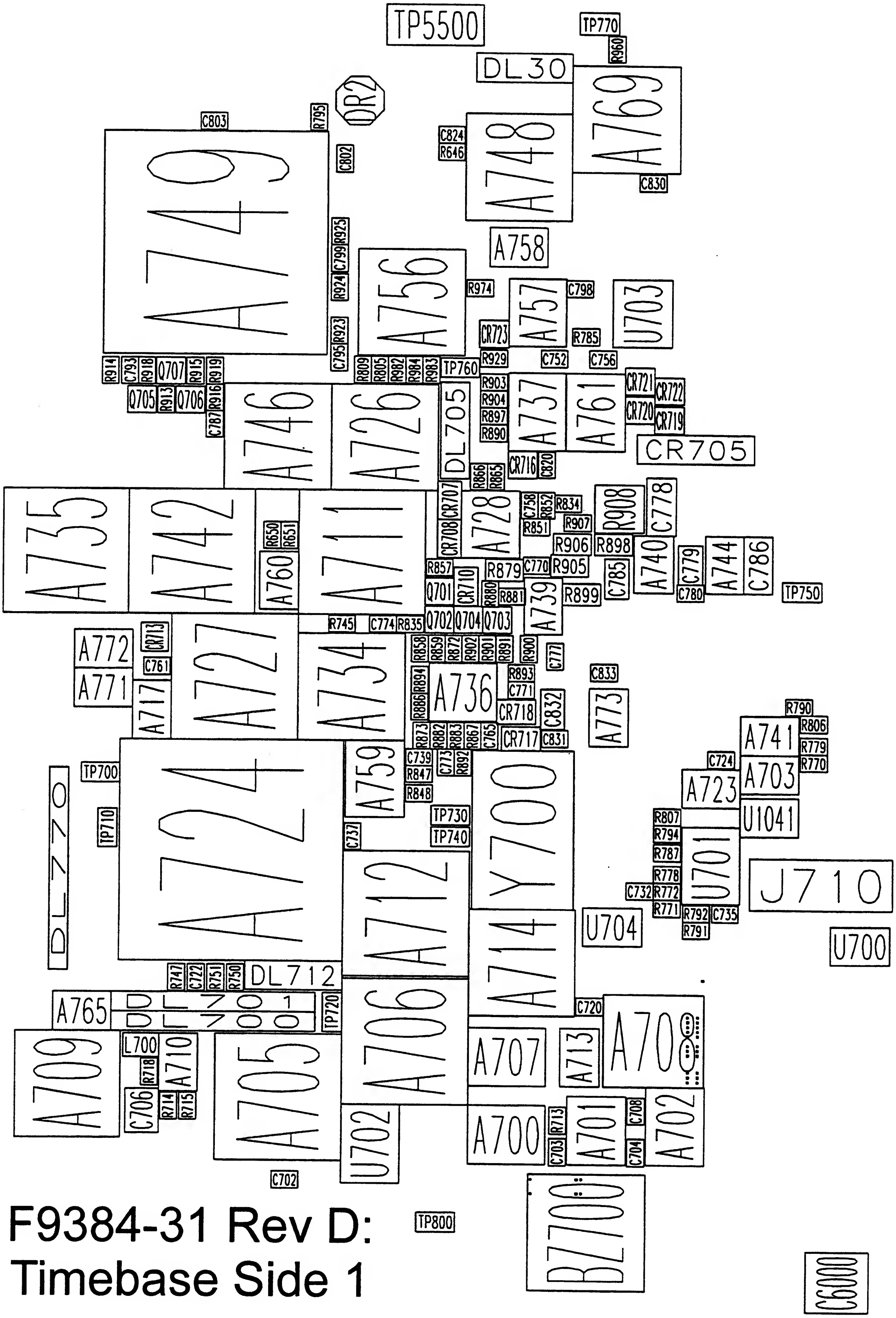
ADC Side 2



F9384-31 Rev D:
ADC Side 2

Schematics, Layouts



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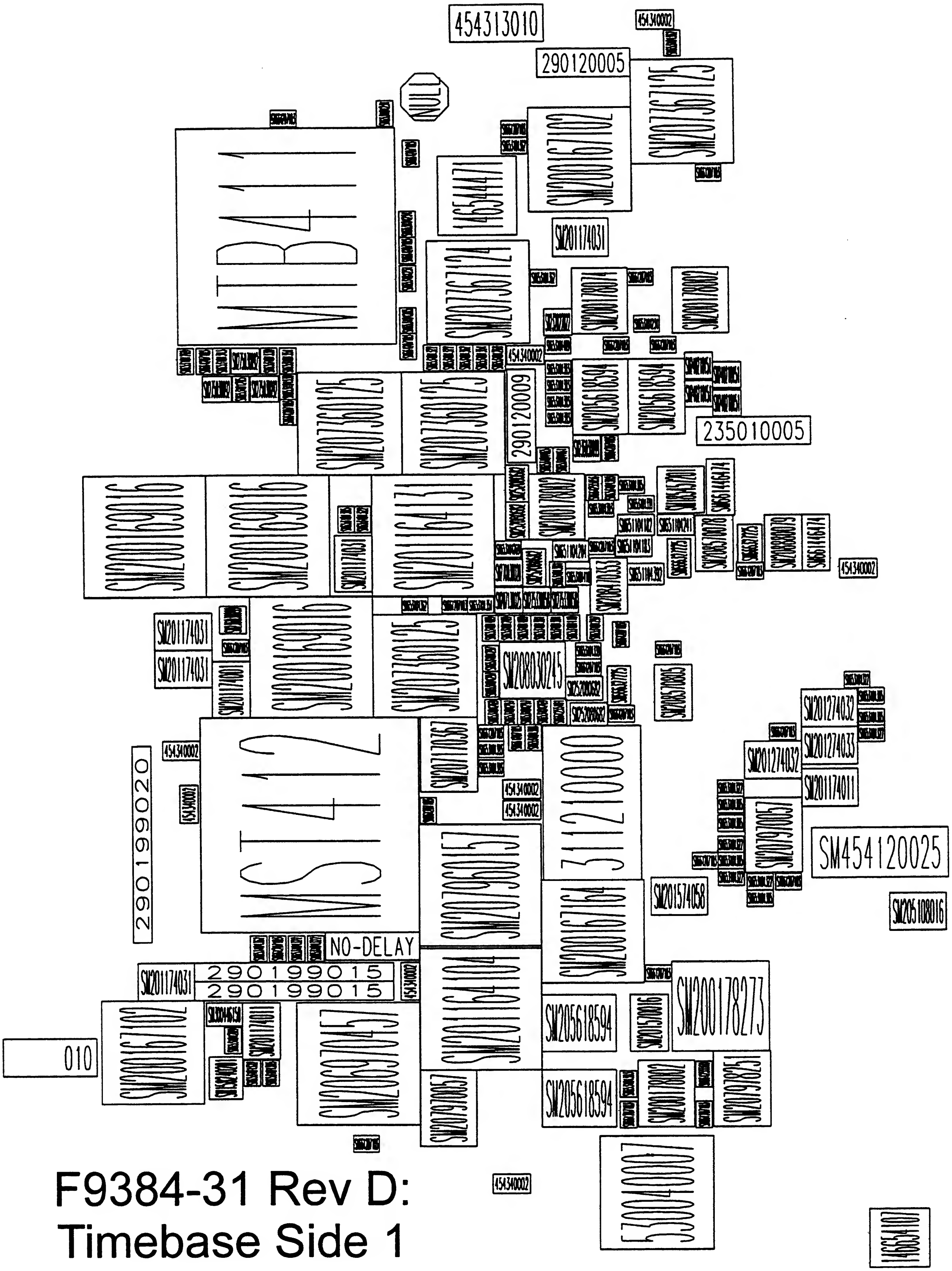
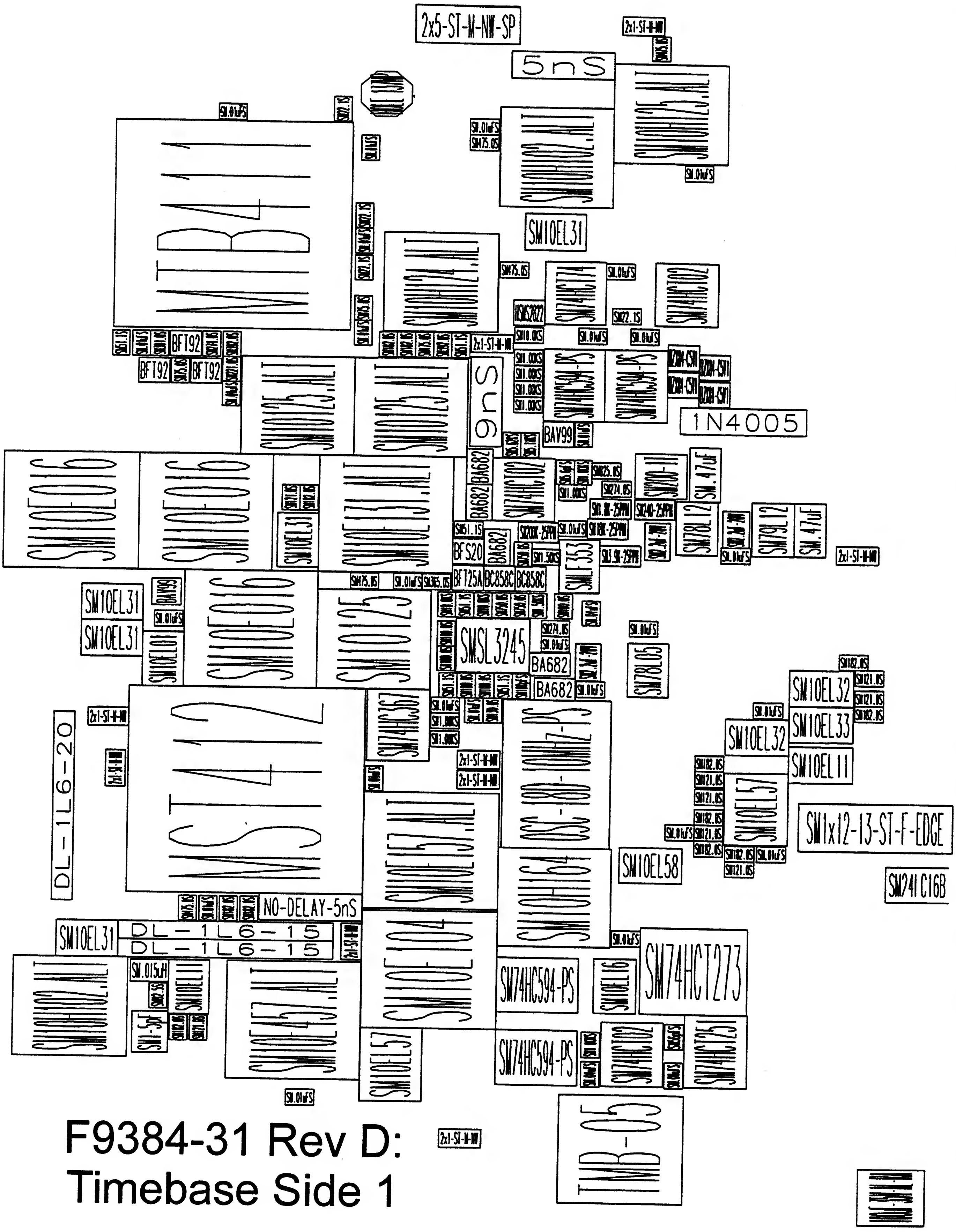


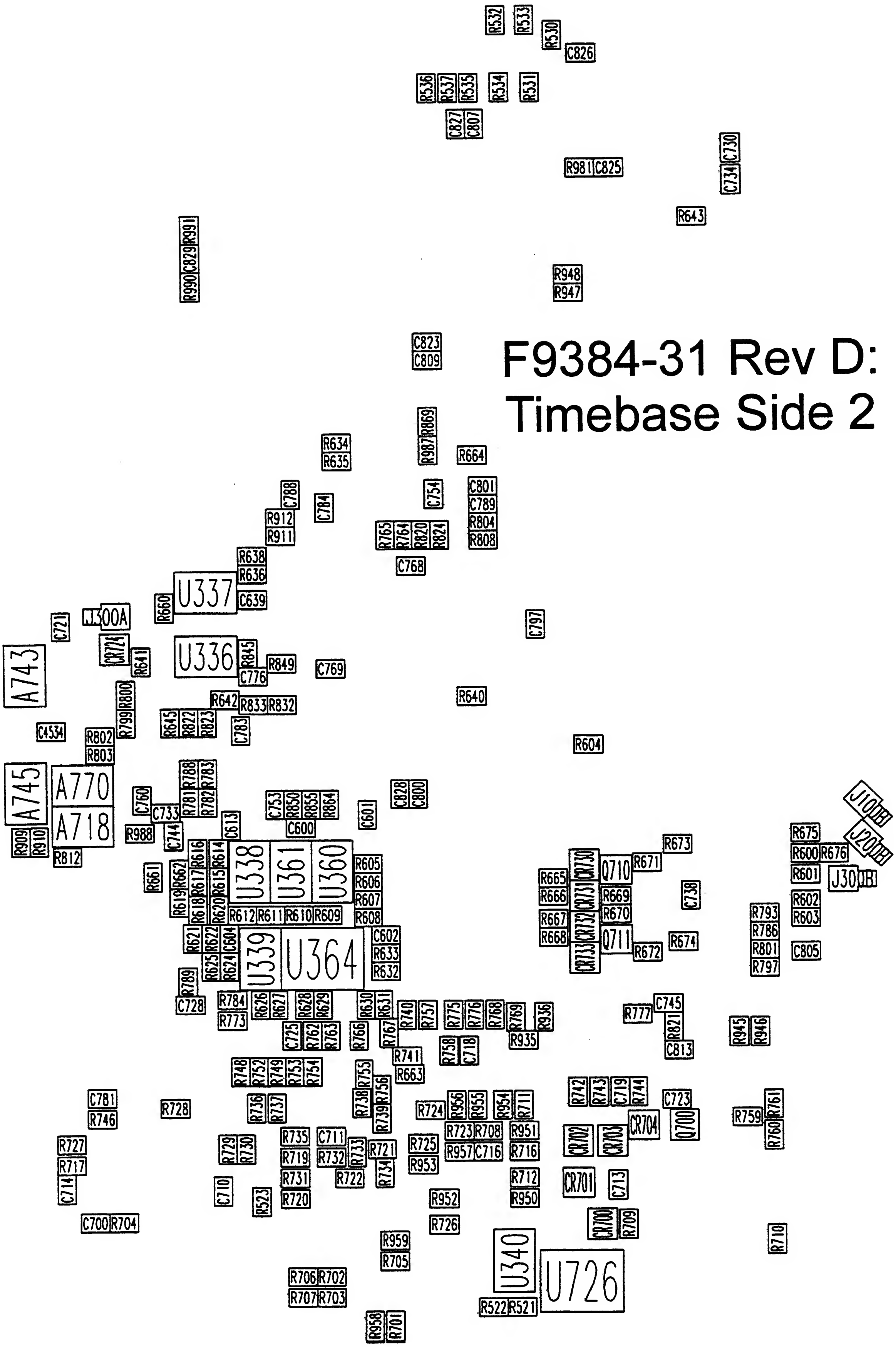
F9384-31 Rev D:
Timebase Side 1

Schematics, Layouts



F9384-31 Rev D:
Timebase Side 1

F9384-31 Rev D: Timebase Side 2



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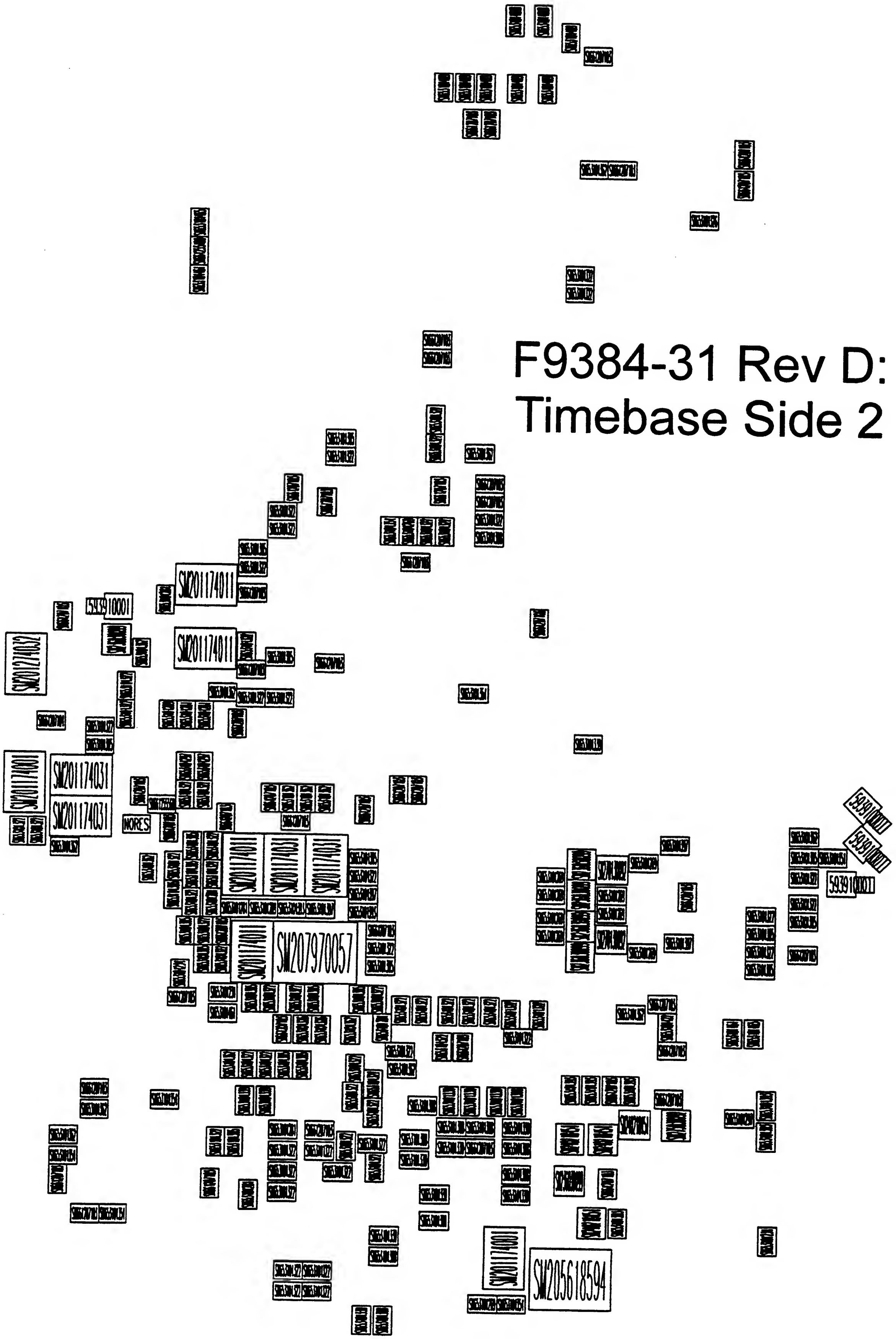

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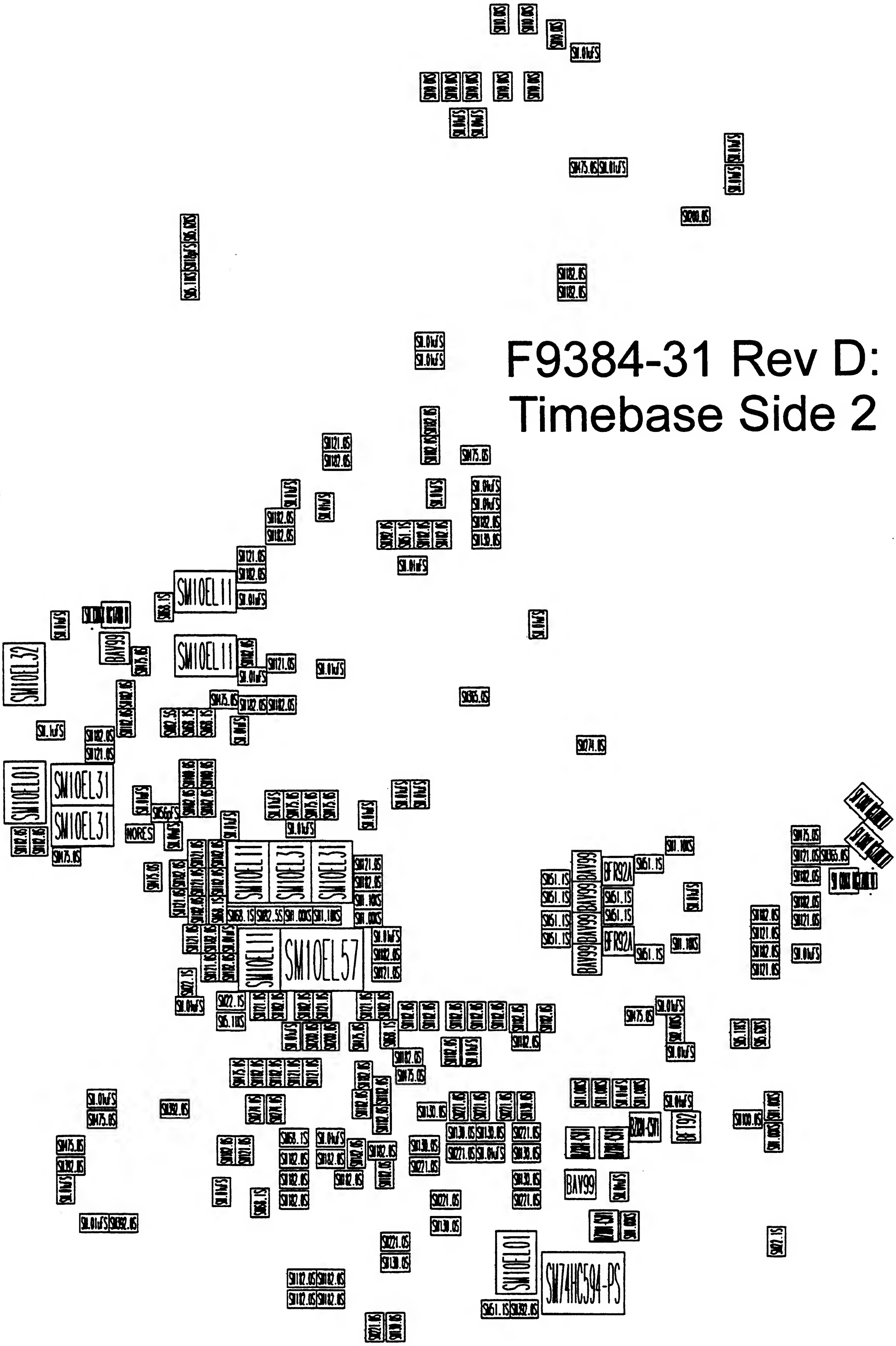

PART: F9384-31 **DESC : 4 CHAN,1GHZ,1GS/S ACQUISITION BOARD**

Location	Part Number	Description
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A2	SM200178138	SM74HCT138
A3	SM200178030	SM74HCT30
A4	SM200178138	SM74HCT138
A5	SM200178138	SM74HCT138
A6	SM206260858	SMADC0858
A7	SM207970351	SM74HC4351
A8	SM206070584	SMPCD8584
A9	SM207978251	SM74HCT251
A10	SM200178138	SM74HCT138
A11	SM205108016	SM24LC16B
A12	SM206885245	SM74ABT245
A13	SM200178000	SM74HCT00
A14	SM206885245	SM74ABT245
A15	SM207171244	SM74ABT244
A16	SM205045357	CHEMIN-A
A17	SM205045358	ROUTE3-C
A18	SM205045355	RUELLE-A
A19	SM205045359	ARTERE-B
A20	SM205045354	AVENUE-A
A21	SM205045350	ROUTE1-A
A22	SM205045352	ROUTE2-B
A23	SM205045351	ROUTE2-A
A24	SM207171244	SM74ABT244
A25	SM207171244	SM74ABT244
A26	MCL404	MCL404
A27	SM207171244	SM74ABT244
A28	SM205045300	MIMOSA-A
A29	SM207972157	SM74F157A
A30	SM207280703	SMDAC703
A31	SM200169191	SM74F191
A32	SM200169191	SM74F191
A33	SM200169191	SM74F191
A34	SM200169191	SM74F191
A35	SM200169191	SM74F191
A36	SM207970139	SM74F139
A37	SM200278040	SM74HCT4040
A39	SM206884623	SM74ABT623
A40	SM206884623	SM74ABT623
A41	SM207970139	SM74F139
A42	SM200178374	SM74HCT374
A43	SM200178074	SM74HCT74
A44	SM200178273	SM74HCT273
A45	SM208570805	SM78L05
A202	SM208870339	SMLM339
A203	208124003	7912
A204	208123002	7812
A205	SM208470347	SMLF347
A206	SM207770201	SMDG201-PS
A207	SM208470347	SMLF347
A208	SM207770201	SMDG201-PS
A209	208124003	7912
A210	208123002	7812
A211	SM208470347	SMLF347
A212	SM207770201	SMDG201-PS
A213	SM208470324	SMLM324
A214	SM208470347	SMLF347
A215	SM207770201	SMDG201-PS
A400	208124003	7912-SP
A402	208123002	7812-SP
A700	SM205618594	SM74HC594-PS
A701	SM200178002	SM74HCT02
A702	SM207978251	SM74HCT251
A703	SM201274033	SM10EL33
A705	SM206970457	SM10E457
A706	SM201164104	SM10E104
A707	SM205618594	SM74HC594-PS
A708	SM200178273	SM74HCT273
A709	SM200167102	SM10H102
A710	SM201174011	SM10EL11
A711	SM201164131	SM10E131
A712	SM207960157	SM10E157
A713	SM201570016	SM10EL16
A714	SM200167164	SM10H164
A717	SM201174001	SM10EL01
A718	SM201174031	SM10EL31
A723	SM201274032	SM10EL32
A724	MST412	MST412
A726	SM207360125	SM10125
A727	SM200169016	SM10E016
A728	SM200178002	SM74HCT02
A734	SM207360125	SM10125
A735	SM200169016	SM10E016
A736	SM208030245	SMSL3245
A737	SM205618594	SM74HC594-PS
A739	SM208470353	SMLF353

PART: F9384-31 **DESC : 4 CHAN,1GHZ,1GS/S ACQUISITION BOARD**

Location	Part Number	Description
A740	SM208570078	SM78L12
A741	SM201274032	SM10EL32
A742	SM200169016	SM10E016
A743	SM201274032	SM10EL32
A744	SM208880079	SM79L12
A745	SM201174001	SM10EL01
A746	SM207360125	SM10125
A748	SM200167102	SM10H102
A749	MTB411	MTB411
A756	SM207367124	SM10H124
A757	SM200178074	SM74HCT74
A758	SM201174031	SM10EL31
A759	SM207170367	SM74HC367
A760	SM201174031	SM10EL31
A761	SM205618594	SM74HC594-PS
A765	SM201174031	SM10EL31
A769	SM207367125	SM10H125
A770	SM201174031	SM10EL31
A771	SM201174031	SM10EL31
A772	SM201174031	SM10EL31
A773	SM208570805	SM78L05
A1000	SM208470111	SMCLC111
A1001	SM208470705	SMAD705
A1002	SM208480640	SMOPA640
A1003	HFE624	HFE624
A1004	SM208470705	SMAD705
A1005	SM207770442	SMDG442-PS
A1006	SM208870339	SMLM339
A1007	SM289772003	SMULN2003
A1008	SM205618594	SM74HC594-PS
A1009	SM205618594	SM74HC594-PS
A1010	SM208470705	SMAD705
A1011	SM208880337	SM337L
A2000	SM208470111	SMCLC111
A2001	SM208470705	SMAD705
A2002	SM208480640	SMOPA640
A2003	HFE624	HFE624
A2004	SM208470705	SMAD705
A2005	SM207770442	SMDG442-PS
A2006	SM208870339	SMLM339
A2007	SM289772003	SMULN2003
A2008	SM205618594	SM74HC594-PS
A2009	SM205618594	SM74HC594-PS
A2010	SM208470705	SMAD705
A2011	SM208880337	SM337L
A3000	SM208470111	SMCLC111
A3001	SM208470705	SMAD705
A3002	SM208480640	SMOPA640
A3003	HFE624	HFE624
A3004	SM208470705	SMAD705
A3005	SM207770442	SMDG442-PS
A3006	SM208870339	SMLM339
A3007	SM289772003	SMULN2003
A3008	SM205618594	SM74HC594-PS
A3009	SM205618594	SM74HC594-PS
A3010	SM208470705	SMAD705
A3011	SM208880337	SM337L
A4000	SM208470111	SMCLC111
A4001	SM208470705	SMAD705
A4002	SM208480640	SMOPA640
A4003	HFE624	HFE624
A4004	SM208470705	SMAD705
A4005	SM207770442	SMDG442-PS
A4006	SM208870339	SMLM339
A4007	SM289772003	SMULN2003
A4008	SM205618594	SM74HC594-PS
A4009	SM205618594	SM74HC594-PS
A4010	SM208470705	SMAD705
A4011	SM208880337	SM337L
A5000	SM208470705	SMAD705
A5001	SM208971881	SMLM1881
A5002	SM208470037	SMOP37
A5003	SM208470351	SMLF351
A5004	SM207770403	SMDG403-PS
A5005	SM207970508	SMDG508-PS
A5006	SM205618594	SM74HC594-PS
A5007	SM207770442	SMDG442-PS
A5008	SM205618594	SM74HC594-PS
A5009	SM205618594	SM74HC594-PS
A5010	MTR408	MTR408
A5011	MTR408	MTR408
A5012	SM205618594	SM74HC594-PS
A5013	SM205618594	SM74HC594-PS
A5014	MTR408	MTR408
A5015	MTR408	MTR408
A5016	SM205618594	SM74HC594-PS

PART: F9384-31 **DESC : 4 CHAN,1GHZ,1GS/S ACQUISITION BOARD**

Location	Part Number	Description
A5017	MTR408	MTR408
A5018	SM201570016	SM10EL16-PS
A5019	SM205618594	SM74HC594-PS
A5020	SM205618594	SM74HC594-PS
A5021	SM207978153	SM74HCT153-PS
A5022	SM208870339	SMLM339
A6000	SM208470353	SMLF353
BR1	BRIDGE	BRIDGE-026
BZ700	530040007	TMB-05
C1	SM661207103	SM.01uFS
C2	SM661207104	SM.1uFS
C3	SM661207103	SM.01uFS
C4	SM661207103	SM.01uFS
C5	SM661207103	SM.01uFS
C6	SM661255181	SM180pFS
C7	SM661207104	SM.1uFS
C8	SM661207103	SM.01uFS
C9	SM661207103	SM.01uFS
C10	SM661207103	SM.01uFS
C11	SM661207103	SM.01uFS
C12	SM661207103	SM.01uFS
C13	SM666247106	SM10uF-25V
C14	SM661207103	SM.01uFS
C15	SM661207103	SM.01uFS
C16	SM661207103	SM.01uFS
C17	SM666247106	SM10uF-25V
C18	SM661207103	SM.01uFS
C19	SM661207103	SM.01uFS
C20	SM661207103	SM.01uFS
C21	SM661207103	SM.01uFS
C22	SM661207103	SM.01uFS
C23	SM666377226	SM22uF-15V
C24	SM666377226	SM22uF-15V
C25	SM661207103	SM.01uFS
C26	SM661207103	SM.01uFS
C27	SM661207103	SM.01uFS
C28	SM661207103	SM.01uFS
C29	SM661207103	SM.01uFS
C30	SM661207103	SM.01uFS
C31	SM661207103	SM.01uFS
C32	SM661207103	SM.01uFS
C33	SM661207103	SM.01uFS
C34	SM661207103	SM.01uFS
C35	SM661207103	SM.01uFS
C36	SM661207103	SM.01uFS
C37	SM661207103	SM.01uFS
C38	SM661207103	SM.01uFS
C39	SM661207103	SM.01uFS
C40	SM661207103	SM.01uFS
C41	SM661207104	SM.1uFS
C42	SM661207103	SM.01uFS
C43	SM661207103	SM.01uFS
C44	SM661207103	SM.01uFS
C45	SM661207104	SM.1uFS
C46	146544471	470uF-25VALR
C47	SM666247106	SM10uF-25V
C48	SM666247106	SM10uF-25V
C49	SM661207103	SM.01uFS
C50	SM666327225	SM2.2uF-20V
C51	SM661207104	SM.1uFS
C52	SM661207104	SM.1uFS
C53	SM661207104	SM.1uFS
C54	SM661207104	SM.1uFS
C55	SM661207104	SM.1uFS
C56	SM661207104	SM.1uFS
C57	SM661207104	SM.1uFS
C58	SM661207104	SM.1uFS
C60	SM666327225	SM2.2uF-20V
C62	SM666377226	SM22uF-15V
C63	SM666377226	SM22uF-15V
C64	SM661207104	SM.1uFS
C81	SM661286103	SM.01uF
C82	SM666377226	SM22uF-15V
C90	SM666377226	SM22uF-15V
C200	SM661207103	SM.01uFS
C201	SM661207103	SM.01uFS
C202	SM661207104	SM.1uFS
C203	SM661207103	SM.01uFS
C204	SM666327225	SM2.2uF-20V
C205	SM661207103	SM.01uFS
C206	SM661207103	SM.01uFS
C207	SM661726103	SM.01uF-NPO
C208	SM661207103	SM.01uFS
C209	SM661207103	SM.01uFS
C210	SM661207103	SM.01uFS
C211	SM661726103	SM.01uF-NPO
C212	SM661726103	SM.01uF-NPO
C213	SM666327225	SM2.2uF-20V

PART: F9384-31 **DESC : 4 CHAN,1GHZ,1GS/S ACQUISITION BOARD**

Location	Part Number	Description
C214	SM666327225	SM2.2uF-20V
C215	SM666327225	SM2.2uF-20V
C216	SM661726103	SM.01uF-NPO
C217	SM661726103	SM.01uF-NPO
C218	SM661207103	SM.01uFS
C219	SM661726103	SM.01uF-NPO
C220	SM661726103	SM.01uF-NPO
C221	SM666327225	SM2.2uF-20V
C222	SM666327225	SM2.2uF-20V
C223	SM666327225	SM2.2uF-20V
C224	SM661726103	SM.01uF-NPO
C225	SM661726103	SM.01uF-NPO
C226	SM661207103	SM.01uFS
C227	SM661207103	SM.01uFS
C228	SM661726103	SM.01uF-NPO
C229	SM661726103	SM.01uF-NPO
C230	SM661207103	SM.01uFS
C231	SM666327225	SM2.2uF-20V
C232	SM661726103	SM.01uF-NPO
C233	SM661726103	SM.01uF-NPO
C234	SM661207103	SM.01uFS
C235	SM661207103	SM.01uFS
C236	SM666327225	SM2.2uF-20V
C237	SM661726103	SM.01uF-NPO
C238	SM661726103	SM.01uF-NPO
C239	SM661207103	SM.01uFS
C240	SM666327225	SM2.2uF-20V
C241	SM666327225	SM2.2uF-20V
C242	SM666327225	SM2.2uF-20V
C255	SM666237476	SM47uF-6V
C262	SM666387336	SM33uF-10V
C263	SM661207103	SM.01uFS
C265	SM661207103	SM.01uFS
C266	SM666387336	SM33uF-10V
C267	SM661207103	SM.01uFS
C268	SM661207103	SM.01uFS
C269	SM661207103	SM.01uFS
C270	SM666327225	SM2.2uF-20V
C271	SM661255102	SM1000pFS
C272	SM661207103	SM.01uFS
C400	146574227	220uF-25VALRA
C403	146554476	47uF-25VALRA
C600	SM661207103	SM.01uFS
C601	SM661207103	SM.01uFS
C602	SM661207103	SM.01uFS
C604	SM661207103	SM.01uFS
C613	SM661207103	SM.01uFS
C639	SM661207103	SM.01uFS
C700	SM661207103	SM.01uFS
C702	SM661207103	SM.01uFS
C703	SM661207103	SM.01uFS
C704	SM661207103	SM.01uFS
C706	SM158240201	SM1-5pF
C708	SM661255560	SM56pFS
C710	SM661207103	SM.01uFS
C711	SM661207103	SM.01uFS
C713	SM661207103	SM.01uFS
C714	SM661207103	SM.01uFS
C716	SM661207103	SM.01uFS
C718	SM661207103	SM.01uFS
C719	SM661207103	SM.01uFS
C720	SM661207103	SM.01uFS
C721	SM661207103	SM.01uFS
C722	SM661207103	SM.01uFS
C723	SM661207103	SM.01uFS
C724	SM661207103	SM.01uFS
C725	SM661207103	SM.01uFS
C728	SM661207103	SM.01uFS
C730	SM661207103	SM.01uFS
C732	SM661207103	SM.01uFS
C733	SM661255560	SM56pFS
C734	SM661207103	SM.01uFS
C735	SM661207103	SM.01uFS
C737	SM661207103	SM.01uFS
C738	SM661207103	SM.01uFS
C739	SM661207103	SM.01uFS
C744	SM661207103	SM.01uFS
C745	SM661207103	SM.01uFS
C752	SM661207103	SM.01uFS
C753	SM661207103	SM.01uFS
C754	SM661207103	SM.01uFS
C756	SM661207103	SM.01uFS
C758	SM661255056	SM5.6pFS
C760	SM661207103	SM.01uFS
C761	SM661207103	SM.01uFS
C765	SM661255101	SM100pFS

PART: F9384-31 **DESC : 4 CHAN,1GHZ,1GS/S ACQUISITION BOARD**

Location	Part Number	Description
C768	SM661207103	SM.01uFS
C769	SM661207103	SM.01uFS
C770	SM661207103	SM.01uFS
C771	SM661207103	SM.01uFS
C773	SM661207103	SM.01uFS
C774	SM661207103	SM.01uFS
C776	SM661207103	SM.01uFS
C777	SM661207103	SM.01uFS
C778	SM661446474	SM.47uF
C779	SM666327225	SM2.2uF-20V
C780	SM661207103	SM.01uFS
C781	SM661207103	SM.01uFS
C783	SM661207103	SM.01uFS
C784	SM661207103	SM.01uFS
C785	SM666327225	SM2.2uF-20V
C786	SM661446474	SM.47uF
C787	SM661207103	SM.01uFS
C788	SM661207103	SM.01uFS
C789	SM661207103	SM.01uFS
C793	SM661207103	SM.01uFS
C795	SM661207103	SM.01uFS
C797	SM661207103	SM.01uFS
C798	SM661207103	SM.01uFS
C799	SM661207103	SM.01uFS
C800	SM661207103	SM.01uFS
C801	SM661207103	SM.01uFS
C802	SM661207103	SM.01uFS
C803	SM661207103	SM.01uFS
C805	SM661207103	SM.01uFS
C807	SM661207103	SM.01uFS
C809	SM661207103	SM.01uFS
C813	SM661207103	SM.01uFS
C820	SM661207103	SM.01uFS
C823	SM661207103	SM.01uFS
C824	SM661207103	SM.01uFS
C825	SM661207103	SM.01uFS
C826	SM661207103	SM.01uFS
C827	SM661207103	SM.01uFS
C828	SM661207103	SM.01uFS
C829	SM661255180	SM18pFS
C830	SM661207103	SM.01uFS
C831	SM661207103	SM.01uFS
C832	SM666327225	SM2.2uF-20V
C833	SM661207103	SM.01uFS
C1001	SM661207104	SM.1uFS
C1002	SM661207104	SM.1uFS
C1003	SM158240203	SM5-18pF
C1005	SM661207103	SM.01uFS
C1006	SM661545150	SM15pFS_500
C1007	SM661535620	SM62pFS_5%
C1008	SM661207103	SM.01uFS
C1009	SM661207103	SM.01uFS
C1010	SM661207103	SM.01uFS
C1011	SM661207103	SM.01uFS
C1012	SM661207103	SM.01uFS
C1013	SM661540033	SM3.3pFS_500
C1014	SM661545150	SM15pFS_500V
C1015	SM661255100	SM10pFS
C1016	SM661255101	SM100pFS
C1017	SM661526561	SM560pF_500V
C1018	SM661255101	SM100pFS
C1019	SM661207103	SM.01uFS
C1021	SM661207103	SM.01uFS
C1022	SM158240203	SM5-18pF
C1024	SM661207103	SM.01uFS
C1025	SM661207103	SM.01uFS
C1026	SM661207103	SM.01uFS
C1028	SM661255101	SM100pFS
C1029	SM661207103	SM.01uFS
C1030	SM661207103	SM.01uFS
C1031	SM661207223	SM.022uFS
C1032	SM661207223	SM.022uFS
C1034	SM158240200	SM0.6-2.5pF
C1035	SM661207103	SM.01uFS
C1036	SM661207103	SM.01uFS
C1038	SM661207103	SM.01uFS
C1039	SM661207103	SM.01uFS
C1041	SM661207103	SM.01uFS
C1042	SM661255821	SM820pFS
C1043	SM661207103	SM.01uFS
C1044	SM661255101	SM100pFS
C1045	SM661207103	SM.01uFS

PART: F9384-31 **DESC : 4 CHAN,1GHZ,1GS/S ACQUISITION BOARD**

Location	Part Number	Description
C1046	SM661207103	SM.01uFS
C1047	SM661207103	SM.01uFS
C1048	SM661207103	SM.01uFS
C1049	SM661255100	SM10pFS
C1050	SM661207103	SM.01uFS
C1051	SM661207103	SM.01uFS
C1052	SM661207103	SM.01uFS
C1053	SM661207103	SM.01uFS
C1054	SM661207103	SM.01uFS
C1055	SM661207103	SM.01uFS
C1056	SM661207103	SM.01uFS
C1057	SM661207104	SM.1uFS
C1058	SM661207103	SM.01uFS
C1059	SM661207103	SM.01uFS
C1060	SM661207104	SM.1uFS
C1061	SM661207103	SM.01uFS
C1062	SM661207103	SM.01uFS
C1063	SM661207104	SM.1uFS
C1065	SM666327225	SM2.2uF-20V
C1066	SM661207103	SM.01uFS
C1067	SM661207103	SM.01uFS
C1068	SM666327225	SM2.2uF-20V
C1069	SM666327225	SM2.2uF-20V
C1070	SM666327225	SM2.2uF-20V
C1071	SM666327225	SM2.2uF-20V
C1072	SM661207103	SM.01uFS
C1073	SM661207103	SM.01uFS
C1074	SM661207103	SM.01uFS
C1075	SM661207104	SM.1uFS
C1076	SM661207103	SM.01uFS
C1077	SM661207103	SM.01uFS
C1079	SM661207104	SM.1uFS
C1086	SM666327225	SM2.2uF-20V
C1087	SM661255101	SM100pFS
C1089	SM661207102	SM.001uFS
C1090	SM661207103	SM.01uFS
C1092	SM661207103	SM.01uFS
C1095	SM661207103	SM.01uFS
C1096	SM661207103	SM.01uFS
C1098	SM661256120	SM12pFS
C1099	SM661255470	SM47pFS
C1500	SM661207103	SM.01uFS
C1501	SM661207103	SM.01uFS

Location	Part Number	Description
C1502	SM158240200	SM0.6-2.5pF
C1503	SM158240200	SM0.6-2.5pF
C1504	SM661286103	SM.01uF
C1505	SM661207103	SM.01uFS
C1506	SM661286103	SM.01uF
C1507	SM661286103	SM.01uF
C1508	SM661207103	SM.01uFS
C1509	SM661286103	SM.01uF
C1510	SM666257336	SM33uF-16V
C1511	SM661286103	SM.01uF
C1512	SM661207103	SM.01uFS
C1513	SM661286103	SM.01uF
C1514	SM661286103	SM.01uF
C1515	SM661207103	SM.01uFS
C1516	SM661286103	SM.01uF
C1517	SM661207103	SM.01uFS
C1518	SM661207103	SM.01uFS
C1520	SM661207103	SM.01uFS
C1521	SM666257336	SM33uF-16V
C1522	SM666327225	SM2.2uF-20V
C1523	146574227	220uF-25VALRA
C1530	SM661207104	SM.1uFS
C1531	SM661207104	SM.1uFS
C1532	SM661207104	SM.1uFS
C1533	SM661207104	SM.1uFS
C1534	SM661207104	SM.1uFS
C1535	SM661207104	SM.1uFS
C1536	SM661207104	SM.1uFS
C1537	SM661207104	SM.1uFS
C1538	SM661207103	SM.01uFS
C1539	SM661207103	SM.01uFS
C1540	SM661207103	SM.01uFS
C1541	SM661207103	SM.01uFS
C1542	SM661207103	SM.01uFS
C1544	SM661207103	SM.01uFS
C1545	SM661207103	SM.01uFS
C1546	SM661207103	SM.01uFS
C1547	SM661207103	SM.01uFS
C1548	SM661207103	SM.01uFS
C1549	SM661207104	SM.1uFS
C1550	SM661207103	SM.01uFS
C1551	SM661207103	SM.01uFS
C1552	SM661207103	SM.01uFS

PART: F9384-31 **DESC : 4 CHAN,1GHZ,1GS/S ACQUISITION BOARD**

Location	Part Number	Description
C1553	SM661207104	SM.1uFS
C1554	SM661207103	SM.01uFS
C1556	SM661207104	SM.1uFS
C1557	SM661207104	SM.1uFS
C1558	SM661207104	SM.1uFS
C1559	SM661207104	SM.1uFS
C1560	SM661207104	SM.1uFS
C1561	SM661207104	SM.1uFS
C1562	SM661207104	SM.1uFS
C1563	SM661207104	SM.1uFS
C1564	SM666237476	SM47uF-6V
C1565	SM666237476	SM47uF-6V
C1566	SM666267227	SM220uF-10V
C1567	SM666267227	SM220uF-10V
C1568	SM661207104	SM.1uFS
C1569	SM661207104	SM.1uFS
C1570	SM661207104	SM.1uFS
C1571	SM666267227	SM220uF-10V
C1572	SM661207104	SM.1uFS
C1573	SM661207104	SM.1uFS
C1574	SM661207104	SM.1uFS
C1575	SM661207103	SM.01uFS
C1576	SM661207104	SM.1uFS
C1577	SM661207104	SM.1uFS
C1578	SM661207103	SM.01uFS
C1580	SM661207103	SM.01uFS
C1581	SM661207103	SM.01uFS
C1582	SM661207103	SM.01uFS
C1583	SM661207104	SM.1uFS
C1584	SM661207103	SM.01uFS
C1600	SM661255039	SM3.9pFS
C1601	158849009	0.5-2.5pF
C1602	SM661207103	SM.01uFS
C2001	SM661207104	SM.1uFS
C2002	SM661207104	SM.1uFS
C2003	SM158240203	SM5-18pF
C2005	SM661207103	SM.01uFS
C2006	SM661545150	SM15pFS_500V
C2007	SM661535620	SM62pFS_5%
C2008	SM661207103	SM.01uFS
C2009	SM661207103	SM.01uFS
C2010	SM661207103	SM.01uFS
C2011	SM661207103	SM.01uFS
C2012	SM661207103	SM.01uFS
C2013	SM661540033	SM3.3pFS_500
C2014	SM661545150	SM15pFS_500V
C2015	SM661255100	SM10pFS
C2016	SM661255101	SM100pFS
C2017	SM661526561	SM560pF_500V
C2018	SM661255101	SM100pFS
C2019	SM661207103	SM.01uFS
C2021	SM661207103	SM.01uFS
C2022	SM158240203	SM5-18pF
C2024	SM661207103	SM.01uFS
C2025	SM661207103	SM.01uFS
C2026	SM661207103	SM.01uFS
C2028	SM661255101	SM100pFS
C2029	SM661207103	SM.01uFS
C2030	SM661207103	SM.01uFS
C2031	SM661207223	SM.022uFS
C2032	SM661207223	SM.022uFS
C2034	SM158240200	SM0.6-2.5pF
C2035	SM661207103	SM.01uFS
C2036	SM661207103	SM.01uFS
C2038	SM661207103	SM.01uFS
C2039	SM661207103	SM.01uFS
C2041	SM661207103	SM.01uFS
C2042	SM661255821	SM820pFS
C2043	SM661207103	SM.01uFS
C2044	SM661255101	SM100pFS
C2045	SM661207103	SM.01uFS
C2046	SM661207103	SM.01uFS
C2047	SM661207103	SM.01uFS
C2048	SM661207103	SM.01uFS
C2049	SM661255100	SM10pFS
C2050	SM661207103	SM.01uFS
C2051	SM661207103	SM.01uFS
C2052	SM661207103	SM.01uFS
C2053	SM661207103	SM.01uFS
C2054	SM661207103	SM.01uFS
C2055	SM661207103	SM.01uFS
C2056	SM661207103	SM.01uFS
C2057	SM661207104	SM.1uFS
C2058	SM661207103	SM.01uFS

PART: F9384-31 **DESC : 4 CHAN,1GHZ,1GS/S ACQUISITION BOARD**

Location	Part Number	Description
C2059	SM661207103	SM.01uFS
C2060	SM661207104	SM.1uFS
C2061	SM661207103	SM.01uFS
C2062	SM661207103	SM.01uFS
C2063	SM661207104	SM.1uFS
C2065	SM666327225	SM2.2uF-20V
C2066	SM661207103	SM.01uFS
C2067	SM661207103	SM.01uFS
C2068	SM666327225	SM2.2uF-20V
C2069	SM666327225	SM2.2uF-20V
C2070	SM666327225	SM2.2uF-20V
C2071	SM666327225	SM2.2uF-20V
C2072	SM661207103	SM.01uFS
C2073	SM661207103	SM.01uFS
C2074	SM661207103	SM.01uFS
C2075	SM661207104	SM.1uFS
C2076	SM661207103	SM.01uFS
C2077	SM661207103	SM.01uFS
C2079	SM661207104	SM.1uFS
C2086	SM666327225	SM2.2uF-20V
C2087	SM661255101	SM100pFS
C2089	SM661207102	SM.001uFS
C2090	SM661207103	SM.01uFS
C2092	SM661207103	SM.01uFS
C2095	SM661207103	SM.01uFS
C2096	SM661207103	SM.01uFS
C2098	SM661256120	SM12pFS
C2099	SM661255470	SM47pFS
C2500	SM661207103	SM.01uFS
C2501	SM661207103	SM.01uFS
C2502	SM158240200	SM0.6-2.5pF
C2503	SM661286103	SM.01uF
C2504	SM661255102	SM1000pFS
C2505	SM661207103	SM.01uFS
C2506	SM661207103	SM.01uFS
C2507	SM661286103	SM.01uF
C2508	SM661255102	SM1000pFS
C2509	SM661255102	SM1000pFS
C2510	SM661286103	SM.01uF
C2511	SM661207103	SM.01uFS
C2512	SM661207103	SM.01uFS
C2513	SM661286103	SM.01uF
C2514	SM661255102	SM1000pFS
C2515	SM661286103	SM.01uF
C2516	SM661207103	SM.01uFS
C2517	SM661286103	SM.01uF
C2518	SM661286103	SM.01uF
C2519	SM661207103	SM.01uFS
C2520	SM661286103	SM.01uF
C2521	SM661207103	SM.01uFS
C2522	SM661207103	SM.01uFS
C2523	SM661286103	SM.01uF
C2524	SM661286103	SM.01uF
C2525	SM661207103	SM.01uFS
C2526	SM661207103	SM.01uFS
C2527	SM661286103	SM.01uF
C2528	SM661286103	SM.01uF
C2529	SM661207104	SM.1uFS
C2530	SM661207104	SM.1uFS
C2531	SM661207104	SM.1uFS
C2532	SM661207104	SM.1uFS
C2533	SM661207103	SM.01uFS
C2534	SM661207103	SM.01uFS
C2535	SM661207103	SM.01uFS
C2536	SM661207103	SM.01uFS
C2537	SM661207103	SM.01uFS
C2538	SM661207103	SM.01uFS
C2540	SM661207103	SM.01uFS
C2541	SM661207104	SM.1uFS
C2542	SM661207104	SM.1uFS
C2543	SM661207104	SM.1uFS
C2544	SM661207104	SM.1uFS
C2545	SM661207103	SM.01uFS
C2546	SM661207103	SM.01uFS
C2547	SM661286103	SM.01uF
C2548	SM661286103	SM.01uF
C2550	SM661286103	SM.01uF
C2551	SM661286103	SM.01uF
C2552	SM661286103	SM.01uF
C2553	SM661286103	SM.01uF
C2554	SM661207103	SM.01uFS
C2555	SM661207103	SM.01uFS
C2556	SM661207104	SM.1uFS
C2557	SM661207103	SM.01uFS
C2558	SM661207103	SM.01uFS
C2559	SM661207103	SM.01uFS

PART: F9384-31 **DESC : 4 CHAN,1GHZ,1GS/S ACQUISITION BOARD**

Location	Part Number	Description	Location	Part Number	Description
C2560	SM661207104	SM.1uFS	C3012	SM661207103	SM.01uFS
C2561	SM661207103	SM.01uFS	C3013	SM661540033	SM3.3pFS_500V
C2562	SM661207103	SM.01uFS	C3014	SM661545150	SM15pFS_500V
C2563	SM661207103	SM.01uFS	C3015	SM661255100	SM10pFS
C2564	SM661207104	SM.1uFS	C3016	SM661255101	SM100pFS
C2565	SM661207104	SM.1uFS	C3017	SM661526561	SM560pF_500V
C2566	SM661207104	SM.1uFS	C3018	SM661255101	SM100pFS
C2567	SM661207104	SM.1uFS	C3019	SM661207103	SM.01uFS
C2568	SM666237476	SM47uF-6V	C3021	SM661207103	SM.01uFS
C2569	SM666267227	SM220uF-10V	C3022	SM158240203	SM5-18pF
C2570	SM666267227	SM220uF-10V	C3024	SM661207103	SM.01uFS
C2571	SM666237476	SM47uF-6V	C3025	SM661207103	SM.01uFS
C2572	SM661207104	SM.1uFS	C3026	SM661207103	SM.01uFS
C2573	SM661207104	SM.1uFS	C3028	SM661255101	SM100pFS
C2574	SM661207104	SM.1uFSC2575	C3029	SM661207104 SM661207103	SM.1uFS SM.01uFS
C2576	SM661207103	SM.01uFS	C3030	SM661207103	SM.01uFS
C2577	SM661207104	SM.1uFS	C3031	SM661207223	SM.022uFS
C2578	SM661207104	SM.1uFS	C3032	SM661207223	SM.022uFS
C2579	SM661207104	SM.1uFS	C3034	SM158240200	SM0.6-2.5pF
C2580	SM661207104	SM.1uFS	C3035	SM661207103	SM.01uFS
C2581	SM661207104	SM.1uFS	C3036	SM661207103	SM.01uFS
C2582	SM661207104	SM.1uFS	C3038	SM661207103	SM.01uFS
C2583	SM661207104	SM.1uFS	C3039	SM661207103	SM.01uFS
C2584	SM661207104	SM.1uFS	C3041	SM661207103	SM.01uFS
C2585	SM661207104	SM.1uFS	C3042	SM661255821	SM820pFS
C2586	SM661207103	SM.01uFS	C3043	SM661207103	SM.01uFS
C2588	SM661207103	SM.01uFS	C3044	SM661255101	SM100pFS
C2589	SM661207103	SM.01uFS	C3045	SM661207103	SM.01uFS
C2590	SM661207103	SM.01uFS	C3046	SM661207103	SM.01uFS
C2595	SM661286103	SM.01uF	C3047	SM661207103	SM.01uFS
C2600	SM661255039	SM3.9pFS	C3048	SM661207103	SM.01uFS
C2601	158849009	0.5-2.5pF	C3049	SM661255100	SM10pFS
C2602	SM661207103	SM.01uFS	C3050	SM661207103	SM.01uFS
C3001	SM661207104	SM.1uFS	C3051	SM661207103	SM.01uFS
C3002	SM661207104	SM.1uFS	C3052	SM661207103	SM.01uFS
C3003	SM158240203	SM5-18pF	C3053	SM661207103	SM.01uFS
C3005	SM661207103	SM.01uFS	C3054	SM661207103	SM.01uFS
C3006	SM661545150	SM15pFS_500V	C3055	SM661207103	SM.01uFS
C3007	SM661535620	SM62pFS_5%	C3056	SM661207103	SM.01uFS
C3008	SM661207103	SM.01uFS	C3057	SM661207104	SM.1uFS
C3009	SM661207103	SM.01uFS	C3058	SM661207103	SM.01uFS
C3010	SM661207103	SM.01uFS	C3059	SM661207103	SM.01uFS
C3011	SM661207103	SM.01uFS	C3060	SM661207104	SM.1uFS

PART: F9384-31 **DESC : 4 CHAN,1GHZ,1GS/S ACQUISITION BOARD**

Location	Part Number	Description
C3061	SM661207103	SM.01uFS
C3062	SM661207103	SM.01uFS
C3063	SM661207104	SM.1uFS
C3065	SM666327225	SM2.2uF-20V
C3066	SM661207103	SM.01uFS
C3067	SM661207103	SM.01uFS
C3068	SM666327225	SM2.2uF-20V
C3069	SM666327225	SM2.2uF-20V
C3070	SM666327225	SM2.2uF-20V
C3071	SM666327225	SM2.2uF-20V
C3072	SM661207103	SM.01uFS
C3073	SM661207103	SM.01uFS
C3074	SM661207103	SM.01uFS
C3075	SM661207104	SM.1uFS
C3076	SM661207103	SM.01uFS
C3077	SM661207103	SM.01uFS
C3079	SM661207104	SM.1uFS
C3086	SM666327225	SM2.2uF-20V
C3087	SM661255101	SM100pFS
C3089	SM661207102	SM.001uFS
C3090	SM661207103	SM.01uFS
C3092	SM661207103	SM.01uFS
C3095	SM661207103	SM.01uFS
C3096	SM661207103	SM.01uFS
C3098	SM661256120	SM12pFS
C3099	SM661255470	SM47pFS
C3500	SM158240200	SM0.6-2.5pF
C3502	SM661286103	SM.01uF
C3503	SM661207103	SM.01uFS
C3504	SM661286103	SM.01uF
C3505	SM661286103	SM.01uF
C3506	SM661207103	SM.01uFS
C3507	SM661286103	SM.01uF
C3508	SM661286103	SM.01uF
C3509	SM661207103	SM.01uFS
C3510	SM661286103	SM.01uF
C3511	SM661286103	SM.01uF
C3512	SM661207103	SM.01uFS
C3513	SM661286103	SM.01uF
C3514	SM661207103	SM.01uFS
C3515	SM661286103	SM.01uF
C3516	SM661286103	SM.01uF
C3517	SM661207103	SM.01uFS
C3518	146554476	47uF-25VALRA
C3519	146574227	220uF-25VALRA
C3520	SM661207103	SM.01uFS
C3521	SM661286103	SM.01uF
C3522	SM661286103	SM.01uF
C3523	SM661207103	SM.01uFS
C3524	SM661286103	SM.01uF
C3525	SM661286103	SM.01uF
C3526	SM661207103	SM.01uFS
C3527	SM661286103	SM.01uF
C3528	SM661286103	SM.01uF
C3529	SM661207103	SM.01uFS
C3530	SM661207103	SM.01uFS
C3531	SM661207104	SM.1uFS
C3532	SM661207104	SM.1uFS
C3533	SM661207104	SM.1uFS
C3534	SM661207104	SM.1uFS
C3535	SM661286103	SM.01uF
C3536	SM661286103	SM.01uF
C3537	SM661286103	SM.01uF
C3538	SM661286103	SM.01uF
C3539	SM661207103	SM.01uFS
C3540	SM661207103	SM.01uFS
C3541	SM661207103	SM.01uFS
C3543	SM661207103	SM.01uFS
C3544	SM661207103	SM.01uFS
C3545	SM661207103	SM.01uFS
C3546	SM661207104	SM.1uFS
C3547	SM661207104	SM.1uFS
C3548	SM661207104	SM.1uFS
C3549	SM661207104	SM.1uFS
C3550	SM661207103	SM.01uFS
C3551	SM661207103	SM.01uFS
C3552	SM661207103	SM.01uFS
C3553	SM661207103	SM.01uFS
C3554	SM661207103	SM.01uFS
C3555	SM661207103	SM.01uFS
C3556	SM661207103	SM.01uFS
C3557	SM661207103	SM.01uFS
C3558	SM661207104	SM.1uFS
C3559	SM661207103	SM.01uFS
C3560	SM661207103	SM.01uFS
C3561	SM661207103	SM.01uFS

PART: F9384-31 **DESC : 4 CHAN,1GHZ,1GS/S ACQUISITION BOARD**

Location	Part Number	Description
C3562	SM661207104	SM.1uFS
C3563	SM661207104	SM.1uFS
C3564	SM661207104	SM.1uFS
C3565	SM661207104	SM.1uFS
C3566	SM661207104	SM.1uFS
C3567	SM666237476	SM47uF-6V
C3568	SM661207104	SM.1uFS
C3569	SM661207104	SM.1uFS
C3570	SM661207104	SM.1uFS
C3571	SM661207104	SM.1uFS
C3572	SM666237476	SM47uF-6V
C3573	SM666267227	SM220uF-10V
C3574	SM661207104	SM.1uFS
C3575	SM661207104	SM.1uFS
C3576	SM661207104	SM.1uFS
C3579	SM661207104	SM.1uFS
C3580	SM661207104	SM.1uFS
C3581	SM661207104	SM.1uFS
C3582	SM666267227	SM220uF-10V
C3584	SM661207104	SM.1uFS
C3585	SM661207103	SM.01uFS
C3586	SM661207103	SM.01uFS
C3587	SM661207104	SM.1uFS
C3588	SM661207104	SM.1uFS
C3589	SM661207103	SM.01uFS
C3590	SM661207103	SM.01uFS
C3591	SM661207103	SM.01uFS
C3592	SM661207103	SM.01uFS
C3593	SM661207103	SM.01uFS
C3600	SM661255039	SM3.9pFS
C3601	158849009	0.5-2.5pF
C3602	SM661207103	SM.01uFS
C3610	SM661207103	SM.01uFS
C3620	SM158240200	SM0.6-2.5pF
C3621	SM158240200	SM0.6-2.5pF
C4001	SM661207104	SM.1uFS
C4002	SM661207104	SM.1uFS
C4003	SM158240203	SM5-18pF
C4005	SM661207103	SM.01uFS
C4006	SM661545150	SM15pFS_500V
C4007	SM661535620	SM62pFS_5%
C4008	SM661207103	SM.01uFS
C4009	SM661207103	SM.01uFS
C4010	SM661207103	SM.01uFS
C4011	SM661207103	SM.01uFS
C4012	SM661207103	SM.01uFS
C4013	SM661540033	SM3.3pFS_500V
C4014	SM661545150	SM15pFS_500V
C4015	SM661255100	SM10pFS
C4016	SM661255101	SM100pFS
C4017	SM661526561	SM560pF_500V
C4018	SM661255101	SM100pFS
C4019	SM661207103	SM.01uFS
C4021	SM661207103	SM.01uFS
C4022	SM158240203	SM5-18pF
C4024	SM661207103	SM.01uFS
C4025	SM661207103	SM.01uFS
C4026	SM661207103	SM.01uFS
C4028	SM661255101	SM100pFS
C4029	SM661207103	SM.01uFS
C4030	SM661207103	SM.01uFS
C4031	SM661207223	SM.022uFS
C4032	SM661207223	SM.022uFS
C4034	SM158240200	SM0.6-2.5pF
C4035	SM661207103	SM.01uFS
C4036	SM661207103	SM.01uFS
C4038	SM661207103	SM.01uFS
C4039	SM661207103	SM.01uFS
C4041	SM661207103	SM.01uFS
C4042	SM661255821	SM820pFS
C4043	SM661207103	SM.01uFS
C4044	SM661255101	SM100pFS
C4045	SM661207103	SM.01uFS
C4046	SM661207103	SM.01uFS
C4047	SM661207103	SM.01uFS
C4048	SM661207103	SM.01uFS
C4049	SM661255100	SM10pFS
C4050	SM661207103	SM.01uFS
C4051	SM661207103	SM.01uFS
C4052	SM661207103	SM.01uFS
C4053	SM661207103	SM.01uFS
C4054	SM661207103	SM.01uFS
C4055	SM661207103	SM.01uFS
C4056	SM661207103	SM.01uFS

PART: F9384-31 DESC : 4 CHAN,1GHZ,1GS/S ACQUISITION BOARD

Location	Part Number	Description
C4057	SM661207104	SM.1uFS
C4058	SM661207103	SM.01uFS
C4059	SM661207103	SM.01uFS
C4060	SM661207104	SM.1uFS
C4061	SM661207103	SM.01uFS
C4062	SM661207103	SM.01uFS
C4063	SM661207104	SM.1uFS
C4065	SM666327225	SM2.2uF-20V
C4066	SM661207103	SM.01uFS
C4067	SM661207103	SM.01uFS
C4068	SM666327225	SM2.2uF-20V
C4069	SM666327225	SM2.2uF-20V
C4070	SM666327225	SM2.2uF-20V
C4071	SM666327225	SM2.2uF-20V
C4072	SM661207103	SM.01uFS
C4073	SM661207103	SM.01uFS
C4074	SM661207103	SM.01uFS
C4075	SM661207104	SM.1uFS
C4076	SM661207103	SM.01uFS
C4077	SM661207103	SM.01uFS
C4079	SM661207104	SM.1uFS
C4086	SM666327225	SM2.2uF-20V
C4087	SM661255101	SM100pFS
C4089	SM661207102	SM.001uFS
C4090	SM661207103	SM.01uFS
C4092	SM661207103	SM.01uFS
C4095	SM661207103	SM.01uFS
C4096	SM661207103	SM.01uFS
C4098	SM661256120	SM12pFS
C4099	SM661255470	SM47pFS
C4500	SM661207103	SM.01uFS
C4501	SM661207103	SM.01uFS
C4502	SM661207103	SM.01uFS
C4504	SM661286103	SM.01uF
C4505	SM661255102	SM1000pFS
C4506	SM661207103	SM.01uFS
C4507	SM661286103	SM.01uF
C4508	SM661255102	SM1000pFS
C4509	SM661255102	SM1000pFS
C4510	SM661286103	SM.01uF
C4511	SM661207103	SM.01uFS
C4512	SM661286103	SM.01uF
C4513	SM661207104	SM.1uFS

Location	Part Number	Description
C4515	SM661207104	SM.1uFS
C4516	SM661207104	SM.1uFS
C4517	SM661207104	SM.1uFS
C4518	SM661207104	SM.1uFS
C4519	SM661207104	SM.1uFS
C4520	SM661207104	SM.1uFS
C4521	SM661207104	SM.1uFS
C4522	SM661207103	SM.01uFS
C4523	SM661207103	SM.01uFS
C4524	SM661207103	SM.01uFS
C4526	SM661207103	SM.01uFS
C4527	SM661207103	SM.01uFS
C4528	SM661207103	SM.01uFS
C4529	SM661207103	SM.01uFS
C4530	SM661207103	SM.01uFS
C4531	SM661207103	SM.01uFS
C4533	SM661207103	SM.01uFS
C4534	SM661207104	SM.1uFS
C4535	SM661207103	SM.01uFS
C4536	SM661207104	SM.1uFS
C4537	SM661207104	SM.1uFS
C4538	SM661207103	SM.01uFS
C4539	SM661207104	SM.1uFS
C4540	SM661207104	SM.1uFS
C4541	SM661207104	SM.1uFS
C4542	SM661207104	SM.1uFS
C4543	SM661207104	SM.1uFS
C4544	SM666237476	SM47uF-6V
C4545	SM666267227	SM220uF-10V
C4546	SM666237476	SM47uF-6V
C4547	SM661207104	SM.1uFS
C4548	SM661207104	SM.1uFS
C4549	SM661207104	SM.1uFS
C4550	SM661207104	SM.1uFS
C4551	SM661207104	SM.1uFS
C4552	SM661207104	SM.1uFS
C4553	SM661207104	SM.1uFS
C4554	SM661207104	SM.1uFS
C4555	SM661207104	SM.1uFS
C4556	SM661207104	SM.1uFS
C4557	SM661207104	SM.1uFS
C4558	SM661207103	SM.01uFS
C4559	SM661207103	SM.01uFS

PART: F9384-31 **DESC : 4 CHAN,1GHZ,1GS/S ACQUISITION BOARD**

Location	Part Number	Description
C4600	SM661255039	SM3.9pFS
C4601	158849009	0.5-2.5pF
C4602	SM661207103	SM.01uFS
C4603	SM661207103	SM.01uFS
C4604	SM661207103	SM.01uFS
C4606	SM661207103	SM.01uFS
C4610	SM661255102	SM1000pFS
C4611	SM661207103	SM.01uFS
C5000	SM661207104	SM.1uFS
C5001	SM661207104	SM.1uFS
C5002	SM661255010	SM1pFS
C5003	SM661207103	SM.01uFS
C5004	SM661207103	SM.01uFS
C5005	SM661540033	SM3.3pFS_500V
C5006	SM661207103	SM.01uFS
C5007	SM661207103	SM.01uFS
C5008	SM661207103	SM.01uFS
C5009	SM661207103	SM.01uFS
C5010	SM661540033	SM3.3pFS_500V
C5011	SM661207103	SM.01uFS
C5012	SM661526561	SM560pF_500V
C5013	SM661207103	SM.01uFS
C5014	SM661207104	SM.1uFS
C5015	SM661207103	SM.01uFS
C5016	SM661207103	SM.01uFS
C5017	SM661207103	SM.01uFS
C5018	SM661255821	SM820pFS
C5019	SM666327225	SM2.2uF-20V
C5020	SM661207104	SM.1uFS
C5021	SM661207103	SM.01uFS
C5022	SM661207103	SM.01uFS
C5023	SM661207103	SM.01uFS
C5024	SM661207103	SM.01uFS
C5025	SM661207103	SM.01uFS
C5026	SM661207103	SM.01uFS
C5027	SM661255220	SM22pFS
C5028	SM661255330	SM33pFS
C5029	SM661207103	SM.01uFS
C5030	SM661207103	SM.01uFS
C5031	SM661545150	SM15pFS_500V
C5032	SM661255270	SM27pFS
C5033	SM661255270	SM27pFS
C5034	SM661207103	SM.01uFS
C5035	SM666427105	SM1uF-16V
C5038	SM666427105	SM1uF-16V
C5039	SM661207103	SM.01uFS
C5040	SM661207103	SM.01uFS
C5041	SM661207103	SM.01uFS
C5042	SM661207103	SM.01uFS
C5043	SM661207103	SM.01uFS
C5044	SM661207103	SM.01uFS
C5045	SM661207103	SM.01uFS
C5046	SM661207103	SM.01uFS
C5047	SM661207103	SM.01uFS
C5048	SM661207103	SM.01uFS
C5049	SM661205822	SM.0082uFS
C5050	SM661205822	SM.0082uFS
C5051	SM661255270	SM27pFS
C5052	SM661207103	SM.01uFS
C5053	SM661207103	SM.01uFS
C5054	SM661255270	SM27pFS
C5055	SM661207103	SM.01uFS
C5056	SM661207103	SM.01uFS
C5057	SM666427105	SM1uF-16V
C5058	SM666427105	SM1uF-16V
C5059	SM661207103	SM.01uFS
C5060	SM661207103	SM.01uFS
C5061	SM661207103	SM.01uFS
C5062	SM661207103	SM.01uFS
C5063	SM661207103	SM.01uFS
C5064	SM661207103	SM.01uFS
C5065	SM661207103	SM.01uFS
C5066	SM661207103	SM.01uFS
C5067	SM661207103	SM.01uFS
C5068	SM661205822	SM.0082uFS
C5069	SM661207103	SM.01uFS
C5070	SM661205822	SM.0082uFS
C5071	SM661207103	SM.01uFS
C5072	SM661207103	SM.01uFS
C5073	SM661207103	SM.01uFS
C5074	SM666327225	SM2.2uF-20V
C5075	SM666327225	SM2.2uF-20V
C5076	SM661255270	SM27pFS
C5077	SM661207103	SM.01uFS

PART: F9384-31 **DESC : 4 CHAN,1GHZ,1GS/S ACQUISITION BOARD**

Location	Part Number	Description
C5078	SM661255101	SM100pFS
C5079	SM666427105	SM1uF-16V
C5083	SM661207104	SM.1uFS
C5084	SM661207103	SM.01uFS
C5085	SM661207103	SM.01uFS
C5086	SM661207103	SM.01uFS
C5087	SM661207103	SM.01uFS
C5088	SM661207103	SM.01uFS
C5089	SM661207103	SM.01uFS
C5090	SM661207103	SM.01uFS
C5091	SM661207103	SM.01uFS
C5092	SM666327225	SM2.2uF-20V
C5093	SM661205822	SM.0082uFS
C5094	SM661207103	SM.01uFS
C5095	SM666327225	SM2.2uF-20V
C5096	SM661207103	SM.01uFS
C5097	SM661207103	SM.01uFS
C5098	SM661207103	SM.01uFS
C5100	SM661207103	SM.01uFS
C5101	SM661207103	SM.01uFS
C5103	SM661207104	SM.1uFS
C5104	SM661207104	SM.1uFS
C5106	SM661207103	SM.01uFS
C5107	SM661255100	SM10pFS
C5108	SM661207103	SM.01uFS
C5110	SM666377226	SM22uF-15V
C5111	SM666377226	SM22uF-15V
C5112	SM661207103	SM.01uFS
C5113	SM661207103	SM.01uFS
C5114	SM661207103	SM.01uFS
C5115	SM661207103	SM.01uFS
C5120	SM661255470	SM47pFS
C5121	SM661255470	SM47pFS
C6000	146654107	100uF-35VALRA
C6001	146654107	100uF-35VALRA
C6003	SM666327225	SM2.2uF-20V
C6004	SM661207103	SM.01uFS
C6005	SM661207103	SM.01uFS
C6006	SM666327225	SM2.2uF-20V
C6007	SM661207103	SM.01uFS
C6008	SM661255102	SM1000pFS
C6009	SM661255056	SM5.6pFS
C7000	SM661207103	SM.01uFS
C7001	SM661207103	SM.01uFS
C7002	SM661207103	SM.01uFS
C7003	SM661207103	SM.01uFS
C7004	SM661207103	SM.01uFS
C7005	SM661207103	SM.01uFS
C7006	SM661207103	SM.01uFS
C7007	SM661207103	SM.01uFS
C7008	SM661207103	SM.01uFS
C7009	SM661255102	SM1000pFS
C7013	SM661207103	SM.01uFS
CR1	SM236030099	BAV99
CR2	SM232120070	BAV70
CR30	SM236030099	BAV99
CR31	SM236030099	BAV99
CR32	SM236030099	BAV99
CR33	SM236030099	BAV99
CR34	SM236030099	BAV99
CR35	SM236030099	BAV99
CR36	SM236030099	BAV99
CR37	SM236030099	BAV99
CR38	SM236030099	BAV99
CR39	SM236030099	BAV99
CR40	SM236030099	BAV99
CR41	SM236030099	BAV99
CR42	SM236030099	BAV99
CR100	SM253032823	HSMS2823
CR200	SM240218451	BZX84-C5V1
CR201	SM240218475	BZX84-C7V5
CR202	SM240218475	BZX84-C7V5
CR207	SM208591336	SMLM336-5
CR400	SM236654004	SM4004
CR401	SM236654004	SM4004
CR700	SM240218451	BZX84-C5V1
CR701	SM236030099	BAV99
CR702	SM240218451	BZX84-C5V1
CR703	SM240218451	BZX84-C5V1
CR704	SM240218451	BZX84-C5V1
CR705	235010005	1N4005
CR707	SM252080682	BA682
CR708	SM252080682	BA682
CR710	SM252080682	BA682
CR713	SM236030099	BAV99
CR716	SM236030099	BAV99

PART: F9384-31 **DESC : 4 CHAN,1GHZ,1GS/S ACQUISITION BOARD**

Location	Part Number	Description
CR717	SM252080682	BA682
CR718	SM252080682	BA682
CR719	SM240218451	BZX84-C5V1
CR720	SM240218451	BZX84-C5V1
CR721	SM240218451	BZX84-C5V1
CR722	SM240218451	BZX84-C5V1
CR723	SM232022822	HSMS2822
CR724	SM236030099	BAV99
CR730	SM236030099	BAV99
CR731	SM236030099	BAV99
CR732	SM236030099	BAV99
CR733	SM236030099	BAV99
CR1000	SM229020150	SMTVSS-5V6
CR1001	SM236030099	BAV99
CR1003	SM236030099	BAV99
CR1004	NOBZX	NOBZX
CR1005	SM252023018	BAT18
CR1006	SM236030099	BAV99
CR1007	SM236030099	BAV99
CR1010	SM240218462	BZX84-C6V2
CR1011	NOBZX84	NOBZX84
CR1500	SM236030099	BAV99
CR1501	SM236030099	BAV99
CR1502	SM236030099	BAV99
CR1503	SM236030099	BAV99
CR1504	SM236030099	BAV99
CR1505	SM236030099	BAV99
CR1506	SM236030099	BAV99
CR1507	SM236030099	BAV99
CR1550	SM236030099	BAV99
CR1551	SM240218451	BZX84-C5V1
CR1552	SM240218451	BZX84-C5V1
CR1553	SM240218451	BZX84-C5V1
CR1554	SM240218451	BZX84-C5V1
CR1555	SM240218451	BZX84-C5V1
CR2000	SM229020150	SMTVSS-5V6
CR2001	SM236030099	BAV99
CR2003	SM236030099	BAV99
CR2004	NOBZX	NOBZX
CR2005	SM252023018	BAT18
CR2006	SM236030099	BAV99
CR2007	SM236030099	BAV99
CR2010	SM240218462	BZX84-C6V2
CR2011	NOBZX84	NOBZX84
CR2500	SM236030099	BAV99
CR2501	SM236030099	BAV99
CR2502	SM236030099	BAV99
CR2503	SM236030099	BAV99
CR2504	SM236030099	BAV99
CR2505	SM236030099	BAV99
CR2506	SM236030099	BAV99
CR2507	SM236030099	BAV99
CR2550	SM253032823	HSMS2823
CR2551	SM253032823	HSMS2823
CR2552	SM253032823	HSMS2823
CR2553	SM253032823	HSMS2823
CR2554	SM253032823	HSMS2823
CR2555	SM253032823	HSMS2823
CR2556	SM253032823	HSMS2823
CR2557	SM253032823	HSMS2823
CR2558	SM253032823	HSMS2823
CR3000	SM229020150	SMTVSS-5V6
CR3001	SM236030099	BAV99
CR3003	SM236030099	BAV99
CR3004	NOBZX	NOBZX
CR3005	SM252023018	BAT18
CR3006	SM236030099	BAV99
CR3007	SM236030099	BAV99
CR3010	SM240218462	BZX84-C6V2
CR3011	NOBZX84	NOBZX84
CR3500	SM236030099	BAV99
CR3501	SM236030099	BAV99
CR3502	SM236030099	BAV99
CR3503	SM236030099	BAV99
CR3504	SM236030099	BAV99
CR3505	SM236030099	BAV99
CR3506	SM236030099	BAV99
CR3507	SM236030099	BAV99
CR3550	SM236030099	BAV99
CR3551	SM240218451	BZX84-C5V1
CR3552	SM240218451	BZX84-C5V1
CR3553	SM240218451	BZX84-C5V1
CR3554	SM240218451	BZX84-C5V1
CR3556	SM240218451	BZX84-C5V1

PART: F9384-31 DESC : 4 CHAN,1GHZ,1GS/S ACQUISITION BOARD

Location	Part Number	Description
CR4000	SM229020150	SMTVSS-5V6
CR4001	SM236030099	BAV99
CR4003	SM236030099	BAV99
CR4004	NOBZX	NOBZX
CR4005	SM252023018	BAT18
CR4006	SM236030099	BAV99
CR4007	SM236030099	BAV99
CR4010	SM240218462	BZX84-C6V2
CR4011	NOBZX84	NOBZX84
CR4500	SM236030099	BAV99
CR4501	SM236030099	BAV99
CR4502	SM236030099	BAV99
CR4503	SM236030099	BAV99
CR4504	SM236030099	BAV99
CR4505	SM236030099	BAV99
CR4506	SM236030099	BAV99
CR4507	SM236030099	BAV99
CR5000	SM229020150	SMTVSS-5V6
CR5001	SM252023018	BAT18
CR5002	SM232120070	BAV70
CR5003	SM236030099	BAV99
CR5004	SM240050033	TZMC3V3
CR5005	SM240050033	TZMC3V3
CR5006	SM240050033	TZMC3V3
CR5007	SM240050033	TZMC3V3
CR5008	NODIODE	NODIODE
CR5009	SM240050033	TZMC3V3
CR5010	SM232120070	BAV70
CR5011	SM236030099	BAV99
CR5012	SM236030099	BAV99
CR6000	SM229020150	SMTVSS-5V6
CR6001	SM253032823	HSMS2823
CR6002	SM232022822	HSMS2822
CR6003	SM240050051	TZMC5V1
CR6004	SM236030099	BAV99
DL30	290120005	5nS
DL700	290199015	DL-1L6-15
DL701	290199015	DL-1L6-15
DL705	290120009	9nS
DL712	NO-DELAY	NO-DELAY-5nS
DL770	290199020	DL-1L6-20
J1	454220096	3x32-ST-F-PF
J2	454112024	2x12-ST
J3	454390002	1x2-ST-M-PL
J4	454117003	1x3-ST-M-PL
J710	SM454120025	SM1x12-13-ST-
J1000	7093XXP01	BNC-93XX-
J1500	454111024	4x6-ST-F-PF-
J1501	454111024	4x48-ST-F-PF-
J2000	7093XXP01	BNC-93XX
J3000	7093XXP01	BNC-93XX-
J3500	454111024	4x6-ST-F-PF-
J3501	454111024	4x48-ST-F-PF-
J4000	7093XXP01	BNC-93XX-
J6000	7093XXP01	BNC-93XX-
J6002	7093XXP01	BNC-93XX-
J100A	593910001	RG178B_U
J100B	593910001	RG178B_U
J10A	593910001	RG178B_U
J10B	593910001	RG178B_U
J200A	593910001	RG178B_U
J200B	593910001	RG178B_U
J2010A	593910001	RG178B_U
J2010B	593910001	RG178B_U
J20A	593910001	RG178B_U
J20B	593910001	RG178B_U
J300A	593910001	RG178B_U
J300B	593910001	RG178B_U
J3010A	593910001	RG178B_U
J3010B	593910001	RG178B_U
J40A	593910001	RG178B_U
J40B	593910001	RG178B_U
J50A	593910001	RG178B_U
J50B	593910001	RG178B_U
L201	SM301502001	SMBEAD1206
L202	SM301502001	SMBEAD1206
L203	SM301502001	SMBEAD1206
L204	SM301502001	SMBEAD1206
L205	SM301502001	SMBEAD1206
L206	SM301502001	SMBEAD1206
L207	SM301502001	SMBEAD1206
L208	SM301502001	SMBEAD1206
L209	SM301502001	SMBEAD1206
L700	SM300446150	SM.015uH
L1000	SM301502001	SMBEAD1206
L1001	SM301502001	SMBEAD1206

PART: F9384-31 **DESC : 4 CHAN,1GHZ,1GS/S ACQUISITION BOARD**

Location	Part Number	Description
L1002	SM301502001	SMBEAD1206
L1003	SM301502001	SMBEAD1206
L1004	SM301502001	SMBEAD1206
L1010	SM669080181	SMBEAD0805
L1011	SM669080181	SMBEAD0805
L1020	SM669080181	SMBEAD0805
L1021	SM669080181	SMBEAD0805
L1022	SM669080181	SMBEAD0805
L1023	SM669080181	SMBEAD0805
L1024	SM669080181	SMBEAD0805
L1025	SM669080181	SMBEAD0805
L1026	SM669080181	SMBEAD0805
L1500	SM301502001	SMBEAD1206
L2000	SM301502001	SMBEAD1206
L2001	SM301502001	SMBEAD1206
L2002	SM301502001	SMBEAD1206
L2003	SM301502001	SMBEAD1206
L2004	SM301502001	SMBEAD1206
L2010	SM669080181	SMBEAD0805
L2011	SM669080181	SMBEAD0805
L2020	SM669080181	SMBEAD0805
L2021	SM669080181	SMBEAD0805
L2022	SM669080181	SMBEAD0805
L2023	SM669080181	SMBEAD0805
L2024	SM669080181	SMBEAD0805
L2025	SM669080181	SMBEAD0805
L2026	SM669080181	SMBEAD0805
L3000	SM301502001	SMBEAD1206
L3001	SM301502001	SMBEAD1206
L3002	SM301502001	SMBEAD1206
L3003	SM301502001	SMBEAD1206
L3004	SM301502001	SMBEAD1206
L3010	SM669080181	SMBEAD0805
L3011	SM669080181	SMBEAD0805
L3020	SM669080181	SMBEAD0805
L3021	SM669080181	SMBEAD0805
L3022	SM669080181	SMBEAD0805
L3023	SM669080181	SMBEAD0805
L3024	SM669080181	SMBEAD0805
L3025	SM669080181	SMBEAD0805
L3026	SM669080181	SMBEAD0805
L4000	SM301502001	SMBEAD1206
L4001	SM301502001	SMBEAD1206
L4002	SM301502001	SMBEAD1206
L4003	SM301502001	SMBEAD1206
L4004	SM301502001	SMBEAD1206
L4010	SM669080181	SMBEAD0805
L4011	SM669080181	SMBEAD0805
L4020	SM669080181	SMBEAD0805
L4021	SM669080181	SMBEAD0805
L4022	SM669080181	SMBEAD0805
L4023	SM669080181	SMBEAD0805
L4024	SM669080181	SMBEAD0805
L4025	SM669080181	SMBEAD0805
L4026	SM669080181	SMBEAD0805
L5000	SM301502001	SMBEAD1206
L5001	SM301502001	SMBEAD1206
L5002	SM301502001	SMBEAD1206
L5003	SM301502001	SMBEAD1206
L6000	SM301502001	SMBEAD1206
L6001	SM301502001	SMBEAD1206
Q205	SM280171005	MTD10N05E
Q206	SM280171005	MTD10N05E
Q207	SM280171005	MTD10N05E
Q700	SM275030092	BFT92
Q701	SM270030020	BFS20
Q702	SM207130025	BFT25A
Q703	SM275330858	BC858C
Q704	SM275330858	BC858C
Q705	SM275030092	BFT92
Q706	SM275030092	BFT92
Q707	SM275030092	BFT92
Q710	SM270130092	BFR92A
Q711	SM270130092	BFR92A
Q1000	SM270160520	BFG520X
Q1001	SM280120416	MMBF4416
Q1002	NOBFT93	NOBFT93
Q1003	SM270160520	BFG520X
Q1004	SM275030550	BF550
Q1005	SM270160520	BFG520X
Q1500	SM280171005	MTD10N05E
Q2000	SM270160520	BFG520X
Q2001	SM280120416	MMBF4416
Q2002	SM275030093	BFT93

PART: F9384-31 **DESC : 4 CHAN,1GHZ,1GS/S ACQUISITION BOARD**

Location	Part Number	Description
Q2003	SM270160520	BFG520X
Q2004	SM275030550	BF550
Q2005	SM270160520	BFG520X
Q2500	SM275330858	BC858C
Q2501	SM275330858	BC858C
Q2502	SM275330858	BC858C
Q2503	SM275330858	BC858C
Q3000	SM270160520	BFG520X
Q3001	SM280120416	MMBF4416
Q3002	SM275030093	BFT93
Q3003	SM270160520	BFG520X
Q3004	SM275030550	BF550
Q3005	SM270160520	BFG520X
Q4000	SM270160520	BFG520X
Q4001	SM280120416	MMBF4416
Q4002	NOBFT93	NOBFT93
Q4003	SM270160520	BFG520X
Q4004	SM275030550	BF550
Q4005	SM270160520	BFG520X
Q4500	SM275330858	BC858C
Q4501	SM275330858	BC858C
Q4502	SM275330858	BC858C
Q4503	SM275330858	BC858C
Q5000	SM270130092	BFR92A
Q5001	SM280120416	MMBF4416
Q5002	SM270130093	BFR93A
Q5003	SM270160520	BFG520X
Q6000	SM270130093	BFR93A
Q6001	SM275030550	BF550
Q6002	SM270130092	BFR92A
Q6003	SM270130093	BFR93A
Q6004	SM275030550	BF550
R1	SM653101489	SM10.0KS
R2	SM653101489	SM10.0KS
R3	SM653101489	SM10.0KS
R4	SM653101489	SM10.0KS
R5	SM653101489	SM10.0KS
R6	SM653101489	SM10.0KS
R7	SM653101489	SM10.0KS
R8	169416473	NTC-DISC-47K
R9	SM653101522	SM22.1KS
R10	SM653101489	SM10.0KS
R11	SM653101489	SM10.0KS
R12	SM653101461	SM5.11KS
R13	SM653101393	SM1.00KS
R14	SM653101443	SM3.32KS
R15	SM653101443	SM3.32KS
R16	SM653101393	SM1.00KS
R17	SM653101393	SM1.00KS
R18	SM653101443	SM3.32KS
R19	SM653101443	SM3.32KS
R20	SM653101393	SM1.00KS
R21	SM653101393	SM1.00KS
R22	SM653101393	SM1.00KS
R23	SM653101443	SM3.32KS
R24	SM653101393	SM1.00KS
R25	SM653101393	SM1.00KS
R26	SM653101439	SM3.01KS
R27	SM653101443	SM3.32KS
R28	SM653101393	SM1.00KS
R29	SM653101489	SM10.0KS
R31	SM654101000	SM0S
R32	SM653101393	SM1.00KS
R33	SM653101393	SM1.00KS
R34	SM653101489	SM10.0KS
R35	SM653101393	SM1.00KS
R36	SM653101393	SM1.00KS
R37	SM653101234	SM22.1S
R38	SM653101489	SM10.0KS
R39	SM653101234	SM22.1S
R40	SM653101234	SM22.1S
R41	SM653101234	SM22.1S
R42	SM653101281	SM68.1S
R43	SM653101281	SM68.1S
R44	SM653101281	SM68.1S
R45	SM653101393	SM1.00KS
R46	SM653101489	SM10.0KS
R47	SM653101489	SM10.0KS
R48	SM653101489	SM10.0KS
R49	SM653101489	SM10.0KS
R52	SM652115062	SM6.2-1W
R54	SM653101489	SM10.0KS
R56	SM653101201	SM10.0S
R57	SM653101401	SM1.21KS
R58	SM653101234	SM22.1S
R59	SM654101000	SM0S-B2P

PART: F9384-31 **DESC : 4 CHAN,1GHZ,1GS/S ACQUISITION BOARD**

Location	Part Number	Description
R60	SM654101000	SM0S-B2P
R61	SM654101000	SM0S-B2P
R130	SM653101289	SM82.5S
R200	SM653101489	SM10.0KS
R201	SM653101401	SM1.21KS
R205	SM653101393	SM1.00KS
R206	SM653101443	SM3.32KS
R207	SM653101673	SM825.0KS
R211	SM653101531	SM27.4KS
R212	SM653101410	SM1.50KS
R213	SM653101465	SM5.62KS
R214	SM653101489	SM10.0KS
R215	SM653101489	SM10.0KS
R216	SM653101489	SM10.0KS
R217	SM653101489	SM10.0KS
R218	SM653101489	SM10.0KS
R219	SM653101489	SM10.0KS
R220	SM653101489	SM10.0KS
R221	SM653101489	SM10.0KS
R222	SM653101489	SM10.0KS
R223	SM653101489	SM10.0KS
R224	SM653101489	SM10.0KS
R225	SM653101489	SM10.0KS
R226	SM653101489	SM10.0KS
R231	SM653101269	SM51.1S
R233	SM653101489	SM10.0KS
R234	SM653101489	SM10.0KS
R247	SM653101269	SM51.1S
R252	SM653101269	SM51.1S
R254	SM653101269	SM51.1S
R260	SM653101393	SM1.00KS
R262	SM653101393	SM1.00KS
R263	SM653101393	SM1.00KS
R264	SM653101393	SM1.00KS
R265	SM653101393	SM1.00KS
R266	SM653101393	SM1.00KS
R267	SM654101000	SM0S
R269	SM653101393	SM1.00KS
R270	SM653101297	SM100.0S
R271	SM653101297	SM100.0S
R272	SM653101297	SM100.0S
R273	SM653101297	SM100.0S
R280	SM653101393	SM1.00KS
R281	SM653101393	SM1.00KS
R500	SM653101489	SM10.0KS
R501	SM653101489	SM10.0KS
R502	SM653101489	SM10.0KS
R503	SM653101489	SM10.0KS
R504	SM653101489	SM10.0KS
R505	SM653101489	SM10.0KS
R506	SM653101489	SM10.0KS
R507	SM653101489	SM10.0KS
R510	SM653101489	SM10.0KS
R511	SM653101489	SM10.0KS
R512	SM653101489	SM10.0KS
R513	SM653101489	SM10.0KS
R521	SM653101354	SM392.0S
R522	SM653101269	SM51.1S
R523	SM653101281	SM68.1S
R530	SM653101489	SM10.0KS
R531	SM653101489	SM10.0KS
R532	SM653101489	SM10.0KS
R533	SM653101489	SM10.0KS
R534	SM653101489	SM10.0KS
R535	SM653101489	SM10.0KS
R536	SM653101489	SM10.0KS
R537	SM653101489	SM10.0KS
R540	SM654101000	SM0S-2P
R541	SM654101000	SM0S-2P
R600	SM653101305	SM121.0S
R601	SM653101322	SM182.0S
R602	SM653101322	SM182.0S
R603	SM653101305	SM121.0S
R604	SM653101339	SM274.0S
R605	SM653101305	SM121.0S
R606	SM653101322	SM182.0S
R607	SM653101397	SM1.10KS
R608	SM653101393	SM1.00KS
R609	SM653101397	SM1.10KS
R610	SM653101393	SM1.00KS
R611	SM653101289	SM82.5S
R612	SM653101281	SM68.1S
R614	SM653101322	SM182.0S
R615	SM653101322	SM182.0S

PART: F9384-31 DESC : 4 CHAN,1GHZ,1GS/S ACQUISITION BOARD

Location	Part Number	Description
R616	SM653101305	SM121.0S
R617	SM653101305	SM121.0S
R618	SM653101322	SM182.0S
R619	SM653101305	SM121.0S
R620	SM653101281	SM68.1S
R621	SM653101305	SM121.0S
R622	SM653101322	SM182.0S
R624	SM653101322	SM182.0S
R625	SM653101305	SM121.0S
R626	SM653101305	SM121.0S
R627	SM653101322	SM182.0S
R628	SM653101322	SM182.0S
R629	SM653101305	SM121.0S
R630	SM653101305	SM121.0S
R631	SM653101322	SM182.0S
R632	SM653101305	SM121.0S
R633	SM653101322	SM182.0S
R634	SM653101305	SM121.0S
R635	SM653101322	SM182.0S
R636	SM653101322	SM182.0S
R638	SM653101305	SM121.0S
R640	SM653101351	SM365.0S
R641	SM653101362	SM475.0S
R642	SM653101362	SM475.0S
R643	SM653101326	SM200.0S
R645	SM653101289	SM82.5S
R646	SM653101362	SM475.0S
R650	SM653101305	SM121.0S
R651	SM653101322	SM182.0S
R660	SM653101281	SM68.1S
R661	SM653101362	SM475.0S
R662	SM653101322	SM182.0S
R663	SM653101362	SM475.0S
R664	SM653101362	SM475.0S
R665	SM653101269	SM51.1S
R666	SM653101269	SM51.1S
R667	SM653101269	SM51.1S
R668	SM653101269	SM51.1S
R669	SM653101269	SM51.1S
R670	SM653101269	SM51.1S
R671	SM653101269	SM51.1S
R672	SM653101269	SM51.1S
R673	SM653101397	SM1.10KS
R745	SM653101362	SM475.0S
R746	SM653101362	SM475.0S
R747	SM653101362	SM475.0S
R748	SM653101362	SM475.0S
R749	SM653101322	SM182.0S
R750	SM653101322	SM182.0S
R751	SM653101322	SM182.0S
R752	SM653101322	SM182.0S
R753	SM653101305	SM121.0S
R754	SM653101305	SM121.0S
R755	SM653101322	SM182.0S
R756	SM653101322	SM182.0S
R757	SM653101322	SM182.0S
R758	SM653101322	SM182.0S
R759	SM653101297	SM100.0S
R760	SM653101393	SM1.00KS
R761	SM653101393	SM1.00KS
R762	SM653101326	SM200.0S
R763	SM653101326	SM200.0S
R764	SM653101269	SM51.1S
R765	SM653101354	SM392.0S
R766	SM653101362	SM475.0S
R767	SM653101281	SM68.1S
R768	SM653101322	SM182.0S
R769	SM653101322	SM182.0S
R770	SM653101322	SM182.0S
R771	SM653101322	SM182.0S
R772	SM653101305	SM121.0S
R773	SM653101461	SM5.11KS
R775	SM653101322	SM182.0S
R776	SM653101322	SM182.0S
R777	SM653101362	SM475.0S
R778	SM653101322	SM182.0S
R779	SM653101305	SM121.0S
R781	SM653101322	SM182.0S
R782	SM653101322	SM182.0S
R783	SM653101297	SM100.0S
R784	SM653101234	SM22.1S
R785	SM653101234	SM22.1S
R786	SM653101305	SM121.0S
R787	SM653101305	SM121.0S
R788	SM653101297	SM100.0S
R789	SM653101234	SM22.1S

PART: F9384-31 **DESC : 4 CHAN,1GHZ,1GS/S ACQUISITION BOARD**

Location	Part Number	Description
R790	SM653101322	SM182.0S
R791	SM653101305	SM121.0S
R792	SM653101322	SM182.0S
R793	SM653101322	SM182.0S
R794	SM653101305	SM121.0S
R795	SM653101234	SM22.1S
R797	SM653101305	SM121.0S
R799	SM653101322	SM182.0S
R800	SM653101322	SM182.0S
R801	SM653101322	SM182.0S
R802	SM653101322	SM182.0S
R803	SM653101305	SM121.0S
R804	SM653101322	SM182.0S
R805	SM653101322	SM182.0S
R806	SM653101305	SM121.0S
R807	SM653101322	SM182.0S
R808	SM653101308	SM130.0S
R809	SM653101322	SM182.0S
R812	SM653101362	SM475.0S
R820	SM653101322	SM182.0S
R821	SM653101422	SM2.00KS
R822	SM653101281	SM68.1S
R823	SM653101281	SM68.1S
R824	SM653101322	SM182.0S
R832	SM653101322	SM182.0S
R833	SM653101322	SM182.0S
R834	SM653101385	SM825.0S
R835	SM653101351	SM365.0S
R845	SM653101322	SM182.0S
R847	SM653101393	SM1.00KS
R848	SM653101393	SM1.00KS
R849	SM653101305	SM121.0S
R850	SM653101362	SM475.0S
R851	SM653101393	SM1.00KS
R852	SM653101393	SM1.00KS
R855	SM653101362	SM475.0S
R857	SM653101269	SM51.1S
R858	SM653101489	SM10.0KS
R859	SM653101269	SM51.1S
R864	SM653101362	SM475.0S
R865	SM653101461	SM5.11KS
R866	SM653101465	SM5.62KS
R867	SM653101269	SM51.1S
R869	SM653101322	SM182.0S
R872	SM653101489	SM10.0KS
R873	SM653101269	SM51.1S
R879	SM651104204	SM200K-25PPM
R880	SM653101381	SM750.0S
R881	SM653101410	SM1.50KS
R882	SM653101297	SM100.0S
R883	SM653101297	SM100.0S
R886	SM653101297	SM100.0S
R890	SM653101393	SM1.00KS
R891	SM653101410	SM1.50KS
R892	SM653101308	SM130.0S
R893	SM653101339	SM274.0S
R894	SM653101297	SM100.0S
R897	SM653101393	SM1.00KS
R898	SM651104241	SM240-25PPM
R899	SM651104392	SM3.9K-25PPM
R900	SM653101297	SM100.0S
R901	SM653101381	SM750.0S
R902	SM653101381	SM750.0S
R903	SM653101393	SM1.00KS
R904	SM653101393	SM1.00KS
R905	SM651104183	SM18K-25PPM
R906	SM651104182	SM1.8K-25PPM
R907	SM653101339	SM274.0S
R908	SM185457201	SM200-1T
R909	SM653101322	SM182.0S
R910	SM653101322	SM182.0S
R911	SM653101322	SM182.0S
R912	SM653101322	SM182.0S
R913	SM653101285	SM75.0S
R914	SM653101269	SM51.1S
R915	SM653101339	SM274.0S
R916	SM653101330	SM221.0S
R918	SM653101343	SM301.0S
R919	SM653101354	SM392.0S
R923	SM653101285	SM75.0S
R924	SM653101234	SM22.1S
R925	SM653101234	SM22.1S
R929	SM653101489	SM10.0KS
R935	SM653101322	SM182.0S

PART: F9384-31 DESC : 4 CHAN,1GHZ,1GS/S ACQUISITION BOARD

Location	Part Number	Description
R936	SM653101322	SM182.0S
R945	SM653101461	SM5.11KS
R946	SM653101465	SM5.62KS
R947	SM653101322	SM182.0S
R948	SM653101322	SM182.0S
R950	SM653101330	SM221.0S
R951	SM653101330	SM221.0S
R952	SM653101330	SM221.0S
R953	SM653101330	SM221.0S
R954	SM653101330	SM221.0S
R955	SM653101330	SM221.0S
R956	SM653101330	SM221.0S
R957	SM653101330	SM221.0S
R958	SM653101330	SM221.0S
R959	SM653101330	SM221.0S
R960	SM653101362	SM475.0S
R974	SM653101362	SM475.0S
R981	SM653101362	SM475.0S
R982	SM653101362	SM475.0S
R983	SM653101269	SM51.1S
R984	SM653101354	SM392.0S
R987	SM653101322	SM182.0S
R990	SM653101461	SM5.11KS
R991	SM653101465	SM5.62KS
R1000	168909001	900.0K-.1%500V
R1001	SM653101251	SM33.2S
R1002	SM653101343	SM301.0S
R1003	SM652061024	SM2.4-0603
R1004	SM653101251	SM33.2S
R1005	SM653101234	SM22.1S
R1006	SM653101489	SM10.0KS
R1007	SM653101358	SM432.0S
R1008	SM653101489	SM10.0KS
R1009	SM653101401	SM1.21KS
R1010	SM653101273	SM56.2S
R1011	SM652181590	SM113K-50PPM
R1012	SM168651315	SM154-1%
R1013	SM168651315	SM154-1%
R1015	SM653101347	SM332.0S
R1016	168909001	900.0K-.1%500V
R1017	SM652181590	SM113K-50PPM
R1018	SM653101269	SM51.1S
R1019	SM653101269	SM51.1S
R1020	SM653101269	SM51.1S
R1021	SM653101297	SM100.0S
R1023	SM653101326	SM200.0S
R1024	SM654101000	SM0S
R1025	SM653101638	SM357.0KS
R1026	SM654101000	SM0S
R1027	SM653101418	SM1.82KS
R1028	SM653101639	SM365.0KS
R1029	SM653185107	SM100.0MS
R1031	SM653101639	SM365.0KS
R1032	SM653101638	SM357.0KS
R1034	SM653101393	SM1.00KS
R1036	SM653101642	SM392.0KS
R1037	SM653101642	SM392.0KS
R1038	SM185457503	SM50K-1T
R1040	SM653101458	SM4.75KS
R1042	SM653101681	SM1.00MS
R1043	SM653101681	SM1.00MS
R1046	SM653101343	SM301.0S
R1047	SM653101393	SM1.00KS
R1048	SM653101489	SM10.0KS
R1049	SM653101557	SM51.1KS
R1050	SM653101347	SM332.0S
R1051	SM652061820	SM82-0603
R1052	SM653101422	SM2.00KS
R1053	SM653101461	SM5.11KS
R1054	SM654101000	SM0S
R1055	SM653101354	SM392.0S
R1056	SM653101269	SM51.1S
R1057	SM653101308	SM130.0S
R1058	SM653101489	SM10.0KS
R1059	SM653101289	SM82.5S
R1060	SM653101489	SM10.0KS
R1061	SM653101443	SM3.32KS
R1062	SM653101269	SM51.1S
R1063	SM653101443	SM3.32KS
R1065	SM653101416	SM1.74KS
R1066	SM185457201	SM200-1T
R1067	SM653101365	SM511.0S
R1068	SM653101443	SM3.32KS
R1069	SM653101373	SM619.0S
R1070	SM653101358	SM432.0S
R1071	SM653101358	SM432.0S

PART: F9384-31 **DESC : 4 CHAN,1GHZ,1GS/S ACQUISITION BOARD**

Location	Part Number	Description
R1072	SM651104392	SM3.9K-25PPM
R1073	SM653101461	SM5.11KS
R1074	SM653101461	SM5.11KS
R1075	SM653101461	SM5.11KS
R1076	SM168651315	SM154-1/oo
R1078	SM653101602	SM150.0KS
R1079	SM653101489	SM10.0KS
R1080	SM653101569	SM68.1KS
R1081	SM653101458	SM4.75KS
R1082	SM653101461	SM5.11KS
R1083	SM653101393	SM1.00KS
R1084	SM653101614	SM200.0KS
R1085	SM653101393	SM1.00KS
R1086	SM653101393	SM1.00KS
R1087	SM653101393	SM1.00KS
R1088	SM653101393	SM1.00KS
R1089	SM653101393	SM1.00KS
R1092	SM653101334	SM243.0S
R1095	SM653101481	SM8.25KS
R1097	SM653101358	SM432.0S
R1099	SM654101000	SM0S-B2P
R1100	SM654101000	SM0S-B2P
R1101	SM654101000	SM0S
R1102	SM654101000	SM0S
R1103	SM653101334	SM243.0S
R1105	SM653101418	SM1.82KS
R1106	SM653101285	SM75.0S
R1150	SM653101347	SM332.0S
R1151	SM185657201	SM200-3313
R1200	SM653101489	SM10.0KS
R1201	SM185657500	SM500-3313
R1202	SM653101269	SM51.1S
R1203	SM185657500	SM500-3313
R1204	SM652061181	SM180-0603
R1500	SM653101269	SM51.1S
R1501	SM653101269	SM51.1S
R1502	SM653101393	SM1.00KS
R1503	SM653101393	SM1.00KS
R1504	SM653101393	SM1.00KS
R1505	SM653101393	SM1.00KS
R1506	SM653101297	SM100.0S
R1507	SM653101489	SM10.0KS

Location	Part Number	Description
R1508	SM653101297	SM100.0S
R1509	SM653101489	SM10.0KS
R1510	SM653101489	SM10.0KS
R1511	SM653101297	SM100.0S
R1512	SM653101489	SM10.0KS
R1513	SM653101297	SM100.0S
R1514	SM654101000	SM0S
R1515	SM653101393	SM1.00KS
R1516	SM653101393	SM1.00KS
R1517	SM653101393	SM1.00KS
R1518	SM653101393	SM1.00KS
R1519	SM653101489	SM10.0KS
R1520	SM653101393	SM1.00KS
R1529	SM653101393	SM1.00KS
R1530	SM653101393	SM1.00KS
R1531	SM653101393	SM1.00KS
R1532	SM653101393	SM1.00KS
R1533	SM653101393	SM1.00KS
R1534	SM653101285	SM75.0S
R1535	SM653101285	SM75.0S
R1536	SM653101326	SM200.0S
R1537	SM653101281	SM68.1S
R1538	SM653101281	SM68.1S
R1539	SM653101326	SM200.0S
R1540	SM653101281	SM68.1S
R1542	SM653101326	SM200.0S
R1543	SM653101281	SM68.1S
R1544	SM653101326	SM200.0S
R1549	SM653101305	SM121.0S
R1550	SM653101322	SM182.0S
R1551	SM653101305	SM121.0S
R1553	SM653101322	SM182.0S
R1554	SM653101305	SM121.0S
R1555	SM653101322	SM182.0S
R1556	SM653101322	SM182.0S
R1558	SM653101322	SM182.0S
R1559	SM653101305	SM121.0S
R1561	SM653101322	SM182.0S
R1563	SM653101305	SM121.0S
R1564	SM653101322	SM182.0S
R1565	SM653101305	SM121.0S
R1566	SM653101305	SM121.0S

PART: F9384-31 DESC : 4 CHAN,1GHZ,1GS/S ACQUISITION BOARD

Location	Part Number	Description
R1567	SM653101305	SM121.0S
R1568	SM653101322	SM182.0S
R1569	SM653101326	SM200.0S
R1570	SM653101326	SM200.0S
R1571	SM653101326	SM200.0S
R1572	SM653101326	SM200.0S
R1573	SM653101281	SM68.1S
R1574	SM653101281	SM68.1S
R1575	SM653101281	SM68.1S
R1576	SM653101281	SM68.1S
R1577	SM653101314	SM150.0S
R1578	SM653101314	SM150.0S
R1579	SM653101314	SM150.0S
R1580	SM653101314	SM150.0S
R1581	SM653101281	SM68.1S
R1582	SM653101281	SM68.1S
R1583	SM653101281	SM68.1S
R1584	SM653101281	SM68.1S
R1585	SM653101269	SM51.1S
R1586	SM653101269	SM51.1S
R1589	SM653101322	SM182.0S
R1590	SM653101322	SM182.0S
R1591	SM653101269	SM51.1S
R1592	SM653101269	SM51.1S
R1593	SM653101322	SM182.0S
R1594	SM653101322	SM182.0S
R1599	SM653101322	SM182.0S
R1600	SM653101305	SM121.0S
R1601	SM653101322	SM182.0S
R1602	SM653101305	SM121.0S
R1610	SM185457501	SM500-1T
R1611	SM185457501	SM500-1T
R1700	SM653101305	SM121.0S
R1701	SM653101305	SM121.0S
R1702	SM653101322	SM182.0S
R1703	SM653101322	SM182.0S
R1704	SM653101281	SM68.1S
R1705	SM653101281	SM68.1S
R1800	SM653101308	SM130.0S
R1801	SM653101322	SM182.0S
R1802	SM653101322	SM182.0S
R1803	SM653101273	SM56.2S
R1804	SM653101273	SM56.2S
R1805	SM653101273	SM56.2S
R1806	SM653101273	SM56.2S
R1807	SM653101308	SM130.0S
R1808	SM653101308	SM130.0S
R1810	SM653101281	SM68.1S
R1811	SM653101281	SM68.1S
R1820	SM653101308	SM130.0S
R1821	SM653101314	SM150.0S
R1822	SM653101314	SM150.0S
R1823	SM653101281	SM68.1S
R1824	SM653101281	SM68.1S
R1825	SM653101314	SM150.0S
R1826	SM653101314	SM150.0S
R1827	SM653101308	SM130.0S
R2000	168909001	900.0K-.1%500V
R2001	SM653101251	SM33.2S
R2002	SM653101343	SM301.0S
R2003	SM652061024	SM2.4-0603
R2004	SM653101251	SM33.2S
R2005	SM653101234	SM22.1S
R2006	SM653101489	SM10.0KS
R2007	SM653101358	SM432.0S
R2008	SM653101489	SM10.0KS
R2009	SM653101401	SM1.21KS
R2010	SM653101273	SM56.2S
R2011	SM652181590	SM113K-50PPM
R2012	SM168651315	SM154-1%
R2013	SM168651315	SM154-1%
R2015	SM653101347	SM332.0S
R2016	168909001	900.0K-.1%500V
R2017	SM652181590	SM113K-50PPM
R2018	SM653101269	SM51.1S
R2019	SM653101269	SM51.1S
R2020	SM653101269	SM51.1S
R2021	SM653101297	SM100.0S
R2023	SM653101326	SM200.0S
R2024	SM654101000	SM0S
R2025	SM653101638	SM357.0KS
R2026	SM654101000	SM0S
R2027	SM653101418	SM1.82KS
R2028	SM653101639	SM365.0KS
R2029	SM653185107	SM100.0MS
R2031	SM653101639	SM365.0KS

PART: F9384-31 **DESC : 4 CHAN,1GHZ,1GS/S ACQUISITION BOARD**

Location	Part Number	Description
R2032	SM653101638	SM357.0KS
R2034	SM653101393	SM1.00KS
R2035	SM653101281	SM68.1S
R2036	SM653101642	SM392.0KS
R2037	SM653101642	SM392.0KS
R2038	SM185457503	SM50K-1T
R2039	SM653101251	SM33.2S
R2040	SM653101458	SM4.75KS
R2042	SM653101681	SM1.00MS
R2043	SM653101681	SM1.00MS
R2044	SM653101201	SM10.0S
R2046	SM653101343	SM301.0S
R2047	SM653101393	SM1.00KS
R2048	SM653101489	SM10.0KS
R2049	SM653101557	SM51.1KS
R2050	SM653101347	SM332.0S
R2051	SM652061820	SM82-0603
R2052	SM653101422	SM2.00KS
R2053	SM653101461	SM5.11KS
R2054	SM654101000	SM0S
R2055	SM653101354	SM392.0S
R2056	SM653101269	SM51.1S
R2057	SM653101308	SM130.0S
R2058	SM653101489	SM10.0KS
R2059	SM653101289	SM82.5S
R2060	SM653101489	SM10.0KS
R2061	SM653101443	SM3.32KS
R2062	SM653101269	SM51.1S
R2063	SM653101443	SM3.32KS
R2065	SM653101416	SM1.74KS
R2066	SM185457201	SM200-1T
R2067	SM653101365	SM511.0S
R2068	SM653101443	SM3.32KS
R2069	SM653101373	SM619.0S
R2070	SM653101358	SM432.0S
R2071	SM653101358	SM432.0S
R2072	SM651104392	SM3.9K-25PPM
R2073	SM653101461	SM5.11KS
R2074	SM653101461	SM5.11KS
R2075	SM653101461	SM5.11KS
R2076	SM168651315	SM154-1/oo
R2078	SM653101602	SM150.0KS
R2079	SM653101489	SM10.0KS
R2080	SM653101569	SM68.1KS
R2081	SM653101458	SM4.75KS
R2082	SM653101461	SM5.11KS
R2083	SM653101393	SM1.00KS
R2084	SM653101614	SM200.0KS
R2085	SM653101393	SM1.00KS
R2086	SM653101393	SM1.00KS
R2087	SM653101393	SM1.00KS
R2088	SM653101393	SM1.00KS
R2089	SM653101393	SM1.00KS
R2092	SM653101334	SM243.0S
R2095	SM653101481	SM8.25KS
R2097	SM653101358	SM432.0S
R2099	SM654101000	SM0S-B2P
R2100	SM654101000	SM0S-B2P
R2101	SM654101000	SM0S
R2102	SM654101000	SM0S
R2103	SM653101334	SM243.0S
R2105	SM653101418	SM1.82KS
R2106	SM653101285	SM75.0S
R2150	SM653101347	SM332.0S
R2151	SM185657201	SM200-3313
R2200	SM653101489	SM10.0KS
R2201	SM185657500	SM500-3313
R2202	SM653101269	SM51.1S
R2203	SM185657500	SM500-3313
R2204	SM652061181	SM180-0603
R2500	SM653101269	SM51.1S
R2501	SM653101269	SM51.1S
R2502	SM653101489	SM10.0KS
R2503	SM653101251	SM33.2S
R2504	SM653101251	SM33.2S
R2505	SM653101489	SM10.0KS
R2506	SM653101489	SM10.0KS
R2507	SM653101489	SM10.0KS
R2508	SM653101489	SM10.0KS
R2509	SM653101489	SM10.0KS
R2510	SM653101489	SM10.0KS
R2511	SM653101489	SM10.0KS
R2512	SM653101251	SM33.2S
R2513	SM653101251	SM33.2S

PART: F9384-31 **DESC : 4 CHAN,1GHZ,1GS/S ACQUISITION BOARD**

Location	Part Number	Description
R2514	SM653101489	SM10.0KS
R2515	SM653101489	SM10.0KS
R2516	SM653101489	SM10.0KS
R2517	SM653101489	SM10.0KS
R2518	SM653101489	SM10.0KS
R2519	SM653101489	SM10.0KS
R2520	SM653101489	SM10.0KS
R2521	SM653101489	SM10.0KS
R2522	SM653101393	SM1.00KS
R2523	SM653101393	SM1.00KS
R2524	SM653101393	SM1.00KS
R2525	SM653101393	SM1.00KS
R2526	SM653101393	SM1.00KS
R2527	SM653101330	SM221.0S
R2528	SM653101393	SM1.00KS
R2529	SM653101322	SM182.0S
R2530	SM653101373	SM619.0S
R2531	SM653101255	SM36.5S
R2532	SM653101397	SM1.10KS
R2533	SM653101230	SM20.0S
R2534	SM653101269	SM51.1S
R2535	SM653101269	SM51.1S
R2536	SM653101393	SM1.00KS
R2537	SM653101266	SM47.5S
R2538	SM653101266	SM47.5S
R2539	SM653101393	SM1.00KS
R2540	SM653101285	SM75.0S
R2541	SM653101285	SM75.0S
R2542	SM653101326	SM200.0S
R2544	SM653101281	SM68.1S
R2545	SM653101281	SM68.1S
R2546	SM653101281	SM68.1S
R2547	SM653101326	SM200.0S
R2548	SM653101281	SM68.1S
R2549	SM653101326	SM200.0S
R2550	SM653101326	SM200.0S
R2554	SM653101305	SM121.0S
R2555	SM653101322	SM182.0S
R2556	SM653101322	SM182.0S
R2557	SM653101305	SM121.0S
R2558	SM653101305	SM121.0S
R2559	SM653101322	SM182.0S
R2560	SM653101322	SM182.0S
R2562	SM653101305	SM121.0S
R2563	SM653101305	SM121.0S
R2564	SM653101322	SM182.0S
R2565	SM653101305	SM121.0S
R2566	SM653101322	SM182.0S
R2567	SM653101322	SM182.0S
R2568	SM653101305	SM121.0S
R2569	SM653101322	SM182.0S
R2570	SM653101305	SM121.0S
R2571	SM653101326	SM200.0S
R2572	SM653101326	SM200.0S
R2573	SM653101326	SM200.0S
R2574	SM653101326	SM200.0S
R2575	SM653101281	SM68.1S
R2576	SM653101281	SM68.1S
R2577	SM653101281	SM68.1S
R2578	SM653101281	SM68.1S
R2579	SM653101314	SM150.0S
R2580	SM653101314	SM150.0S
R2581	SM653101314	SM150.0S
R2582	SM653101314	SM150.0S
R2583	SM653101281	SM68.1S
R2584	SM653101281	SM68.1S
R2585	SM653101281	SM68.1S
R2586	SM653101281	SM68.1S
R2587	SM653101281	SM68.1S
R2588	SM653101281	SM68.1S
R2589	SM653101354	SM392.0S
R2590	SM653101343	SM301.0S
R2591	SM653101354	SM392.0S
R2592	SM653101354	SM392.0S
R2593	SM653101281	SM68.1S
R2594	SM653101281	SM68.1S
R2595	SM653101354	SM392.0S
R2596	SM653101269	SM51.1S
R2597	SM653101269	SM51.1S
R2598	SM654101000	SM0S-2P
R2600	SM653101322	SM182.0S
R2601	SM653101322	SM182.0S
R2602	SM653101269	SM51.1S
R2603	SM653101269	SM51.1S
R2604	SM653101322	SM182.0S
R2605	SM653101322	SM182.0S

PART: F9384-31 **DESC : 4 CHAN,1GHZ,1GS/S ACQUISITION BOARD**

Location	Part Number	Description
R2618	SM653101305	SM121.0S
R2619	SM653101322	SM182.0S
R2620	SM653101322	SM182.0S
R2621	SM653101305	SM121.0S
R2622	SM653101281	SM68.1S
R2623	SM653101281	SM68.1S
R2624	SM653101281	SM68.1S
R2625	SM653101281	SM68.1S
R2630	SM653101281	SM68.1S
R2631	SM653101289	SM82.5S
R2632	SM653101289	SM82.5S
R2633	SM653101281	SM68.1S
R2637	SM653101343	SM301.0S
R2640	SM653101281	SM68.1S
R2641	SM653101281	SM68.1S
R2700	SM653101273	SM56.2S
R2701	SM653101273	SM56.2S
R2702	SM653101308	SM130.0S
R2703	SM653101273	SM56.2S
R2704	SM653101273	SM56.2S
R2705	SM653101308	SM130.0S
R2707	SM653101281	SM68.1S
R2708	SM653101281	SM68.1S
R2710	SM653101308	SM130.0S
R2711	SM653101322	SM182.0S
R2712	SM653101322	SM182.0S
R2713	SM653101314	SM150.0S
R2714	SM653101314	SM150.0S
R2715	SM653101314	SM150.0S
R2716	SM653101314	SM150.0S
R2717	SM653101308	SM130.0S
R2718	SM653101281	SM68.1S
R2719	SM653101281	SM68.1S
R2720	SM653101281	SM68.1S
R2722	SM653101281	SM68.1S
R2723	SM653101308	SM130.0S
R3000	168909001	900.0K-.1%500V
R3001	SM653101251	SM33.2S
R3002	SM653101343	SM301.0S
R3003	SM652061024	SM2.4-0603
R3004	SM653101251	SM33.2S
R3005	SM653101234	SM22.1S
R3006	SM653101489	SM10.0KS
R3007	SM653101358	SM432.0S
R3008	SM653101489	SM10.0KS
R3009	SM653101401	SM1.21KS
R3010	SM653101273	SM56.2S
R3011	SM652181590	SM113K-50PP
R3012	SM168651315	SM154-1%
R3013	SM168651315	SM154-1%
R3015	SM653101347	SM332.0S
R3016	168909001	900.0K-.1%500V
R3017	SM652181590	SM113K-50PPM
R3018	SM653101269	SM51.1S
R3019	SM653101269	SM51.1S
R3020	SM653101269	SM51.1S
R3021	SM653101297	SM100.0S
R3023	SM653101326	SM200.0S
R3024	SM654101000	SM0S
R3025	SM653101638	SM357.0KS
R3026	SM654101000	SM0S
R3027	SM653101418	SM1.82KS
R3028	SM653101639	SM365.0KS
R3029	SM653185107	SM100.0MS
R3031	SM653101639	SM365.0KS
R3032	SM653101638	SM357.0KS
R3034	SM653101393	SM1.00KS
R3035	SM653101281	SM68.1S
R3036	SM653101642	SM392.0KS
R3037	SM653101642	SM392.0KS
R3038	SM185457503	SM50K-1T
R3039	SM653101251	SM33.2S
R3040	SM653101458	SM4.75KS
R3042	SM653101681	SM1.00MS
R3043	SM653101681	SM1.00MS
R3044	SM653101201	SM10.0S
R3046	SM653101343	SM301.0S
R3047	SM653101393	SM1.00KS
R3048	SM653101489	SM10.0KS
R3049	SM653101557	SM51.1KS
R3050	SM653101347	SM332.0S
R3051	SM652061820	SM82-0603
R3052	SM653101422	SM2.00KS
R3053	SM653101461	SM5.11KS

PART: F9384-31 **DESC : 4 CHAN,1GHZ,1GS/S ACQUISITION BOARD**

Location	Part Number	Description
R3054	SM654101000	SM0S
R3055	SM653101354	SM392.0S
R3056	SM653101269	SM51.1S
R3057	SM653101308	SM130.0S
R3058	SM653101489	SM10.0KS
R3059	SM653101289	SM82.5S
R3060	SM653101489	SM10.0KS
R3061	SM653101443	SM3.32KS
R3062	SM653101269	SM51.1S
R3063	SM653101443	SM3.32KS
R3065	SM653101416	SM1.74KS
R3066	SM185457201	SM200-1T
R3067	SM653101365	SM511.0S
R3068	SM653101443	SM3.32KS
R3069	SM653101373	SM619.0S
R3070	SM653101358	SM432.0S
R3071	SM653101358	SM432.0S
R3072	SM651104392	SM3.9K-25PPM
R3073	SM653101461	SM5.11KS
R3074	SM653101461	SM5.11KS
R3075	SM653101461	SM5.11KS
R3076	SM168651315	SM154-1/oo
R3078	SM653101602	SM150.0KS
R3079	SM653101489	SM10.0KS
R3080	SM653101569	SM68.1KS
R3081	SM653101458	SM4.75KS
R3082	SM653101461	SM5.11KS
R3083	SM653101393	SM1.00KS
R3084	SM653101614	SM200.0KS
R3085	SM653101393	SM1.00KS
R3086	SM653101393	SM1.00KS
R3087	SM653101393	SM1.00KS
R3088	SM653101393	SM1.00KS
R3089	SM653101393	SM1.00KS
R3092	SM653101334	SM243.0S
R3095	SM653101481	SM8.25KS
R3097	SM653101358	SM432.0S
R3099	SM654101000	SM0S-B2P
R3100	SM654101000	SM0S-B2P
R3101	SM654101000	SM0S
R3102	SM654101000	SM0S
R3103	SM653101334	SM243.0S
R3105	SM653101418	SM1.82KS
R3106	SM653101285	SM75.0S
R3150	SM653101347	SM332.0S
R3151	SM185657201	SM200-3313
R3200	SM653101489	SM10.0KS
R3201	SM185657500	SM500-3313
R3202	SM653101269	SM51.1S
R3203	SM185657500	SM500-3313
R3204	SM652061181	SM180-0603
R3500	SM653101269	SM51.1S
R3501	SM653101269	SM51.1S
R3502	SM653101305	SM121.0S
R3503	SM653101305	SM121.0S
R3505	SM653101322	SM182.0S
R3506	SM653101322	SM182.0S
R3507	SM653101393	SM1.00KS
R3508	SM653101393	SM1.00KS
R3509	SM653101393	SM1.00KS
R3510	SM653101393	SM1.00KS
R3511	SM653101297	SM100.0S
R3512	SM653101489	SM10.0KS
R3513	SM653101297	SM100.0S
R3514	SM653101489	SM10.0KS
R3515	SM653101297	SM100.0S
R3516	SM653101297	SM100.0S
R3517	SM653101397	SM1.10KS
R3518	SM653101230	SM20.0S
R3520	SM653101255	SM36.5S
R3521	SM653101373	SM619.0S
R3522	SM653101393	SM1.00KS
R3523	SM653101393	SM1.00KS
R3524	SM653101393	SM1.00KS
R3525	SM653101393	SM1.00KS
R3526	SM653101269	SM51.1S
R3527	SM653101269	SM51.1S
R3529	SM653101393	SM1.00KS
R3530	SM653101393	SM1.00KS
R3531	SM653101393	SM1.00KS
R3532	SM653101393	SM1.00KS
R3533	SM653101393	SM1.00KS
R3534	SM653101285	SM75.0S
R3535	SM653101285	SM75.0S
R3536	SM653101326	SM200.0S
R3537	SM653101326	SM200.0S

PART: F9384-31 **DESC : 4 CHAN,1GHZ,1GS/S ACQUISITION BOARD**

Location	Part Number	Description
R3538	SM653101281	SM68.1S
R3539	SM653101281	SM68.1S
R3540	SM653101281	SM68.1S
R3541	SM653101326	SM200.0S
R3542	SM653101281	SM68.1S
R3543	SM653101326	SM200.0S
R3548	SM653101305	SM121.0S
R3549	SM653101305	SM121.0S
R3550	SM653101322	SM182.0S
R3551	SM653101305	SM121.0S
R3553	SM653101322	SM182.0S
R3554	SM653101322	SM182.0S
R3555	SM653101305	SM121.0S
R3556	SM653101322	SM182.0S
R3557	SM653101322	SM182.0S
R3558	SM653101305	SM121.0S
R3559	SM653101322	SM182.0S
R3560	SM653101305	SM121.0S
R3561	SM653101305	SM121.0S
R3562	SM653101305	SM121.0S
R3563	SM653101322	SM182.0S
R3564	SM653101322	SM182.0S
R3565	SM653101314	SM150.0S
R3566	SM653101314	SM150.0S
R3567	SM653101314	SM150.0S
R3568	SM653101314	SM150.0S
R3569	SM653101281	SM68.1S
R3570	SM653101281	SM68.1S
R3571	SM653101281	SM68.1S
R3572	SM653101281	SM68.1S
R3573	SM653101326	SM200.0S
R3574	SM653101326	SM200.0S
R3575	SM653101326	SM200.0S
R3576	SM653101326	SM200.0S
R3577	SM653101281	SM68.1S
R3578	SM653101281	SM68.1S
R3579	SM653101281	SM68.1S
R3580	SM653101281	SM68.1S
R3581	SM653101269	SM51.1S
R3582	SM653101269	SM51.1S
R3585	SM653101322	SM182.0S
R3586	SM653101322	SM182.0S

Location	Part Number	Description
R3587	SM653101269	SM51.1S
R3588	SM653101269	SM51.1S
R3589	SM653101322	SM182.0S
R3590	SM653101322	SM182.0S
R3596	SM653101354	SM392.0S
R3597	SM653101281	SM68.1S
R3598	SM653101281	SM68.1S
R3599	SM653101354	SM392.0S
R3600	SM653101343	SM301.0S
R3601	SM653101354	SM392.0S
R3602	SM653101343	SM301.0S
R3603	SM653101281	SM68.1S
R3604	SM653101281	SM68.1S
R3605	SM653101354	SM392.0S
R3610	SM653101281	SM68.1S
R3611	SM653101281	SM68.1S
R3614	SM653101322	SM182.0S
R3615	SM653101305	SM121.0S
R3616	SM653101322	SM182.0S
R3617	SM653101305	SM121.0S
R3620	SM185457501	SM500-1T
R3621	SM185457501	SM500-1T
R3623	SM653101489	SM10.0KS
R3624	SM653101489	SM10.0KS
R3700	SM653101308	SM130.0S
R3701	SM653101322	SM182.0S
R3702	SM653101322	SM182.0S
R3703	SM653101273	SM56.2S
R3704	SM653101273	SM56.2S
R3705	SM653101308	SM130.0S
R3706	SM653101273	SM56.2S
R3707	SM653101273	SM56.2S
R3708	SM653101308	SM130.0S
R3710	SM653101281	SM68.1S
R3711	SM653101281	SM68.1S
R3712	SM653101308	SM130.0S
R3713	SM653101314	SM150.0S
R3714	SM653101314	SM150.0S
R3715	SM653101314	SM150.0S
R3716	SM653101281	SM68.1S
R3717	SM653101281	SM68.1S
R3718	SM653101314	SM150.0S

PART: F9384-31 **DESC : 4 CHAN,1GHZ,1GS/S ACQUISITION BOARD**

Location	Part Number	Description
R3719	SM653101308	SM130.0S
R4000	168909001	900.0K-.1%500V
R4001	SM653101251	SM33.2S
R4002	SM653101343	SM301.0S
R4003	SM652061024	SM2.4-0603
R4004	SM653101251	SM33.2S
R4005	SM653101234	SM22.1S
R4006	SM653101489	SM10.0KS
R4007	SM653101358	SM432.0S
R4008	SM653101489	SM10.0KS
R4009	SM653101401	SM1.21KS
R4010	SM653101273	SM56.2S
R4011	SM652181590	SM113K-50PPM
R4012	SM168651315	SM154-1%
R4013	SM168651315	SM154-1%
R4015	SM653101347	SM332.0S
R4016	168909001	900.0K-.1%500V
R4017	SM652181590	SM113K-50PPM
R4018	SM653101269	SM51.1S
R4019	SM653101269	SM51.1S
R4020	SM653101269	SM51.1S
R4021	SM653101297	SM100.0S
R4023	SM653101326	SM200.0S
R4024	SM654101000	SM0S
R4025	SM653101638	SM357.0KS
R4026	SM654101000	SM0S
R4027	SM653101418	SM1.82KS
R4028	SM653101639	SM365.0KS
R4029	SM653185107	SM100.0MS
R4031	SM653101639	SM365.0KS
R4032	SM653101638	SM357.0KS
R4034	SM653101393	SM1.00KS
R4036	SM653101642	SM392.0KS
R4037	SM653101642	SM392.0KS
R4038	SM185457503	SM50K-1T
R4040	SM653101458	SM4.75KS
R4042	SM653101681	SM1.00MS
R4043	SM653101681	SM1.00MS
R4046	SM653101343	SM301.0S
R4047	SM653101393	SM1.00KS
R4048	SM653101489	SM10.0KS
R4049	SM653101557	SM51.1KS
R4050	SM653101347	SM332.0S

Location	Part Number	Description
R4051	SM652061820	SM82-0603
R4052	SM653101422	SM2.00KS
R4053	SM653101461	SM5.11KS
R4054	SM654101000	SM0S
R4055	SM653101354	SM392.0S
R4056	SM653101269	SM51.1S
R4057	SM653101308	SM130.0S
R4058	SM653101489	SM10.0KS
R4059	SM653101289	SM82.5S
R4060	SM653101489	SM10.0KS
R4061	SM653101443	SM3.32KS
R4062	SM653101269	SM51.1S
R4063	SM653101443	SM3.32KS
R4065	SM653101416	SM1.74KS
R4066	SM185457201	SM200-1T
R4067	SM653101365	SM511.0S
R4068	SM653101443	SM3.32KS
R4069	SM653101373	SM619.0S
R4070	SM653101358	SM432.0S
R4071	SM653101358	SM432.0S
R4072	SM651104392	SM3.9K-25PPM
R4073	SM653101461	SM5.11KS
R4074	SM653101461	SM5.11KS
R4075	SM653101461	SM5.11KS
R4076	SM168651315	SM154-1/oo
R4078	SM653101602	SM150.0KS
R4079	SM653101489	SM10.0KS
R4080	SM653101569	SM68.1KS
R4081	SM653101458	SM4.75KS
R4082	SM653101461	SM5.11KS
R4083	SM653101393	SM1.00KS
R4084	SM653101614	SM200.0KS
R4085	SM653101393	SM1.00KS
R4086	SM653101393	SM1.00KS
R4087	SM653101393	SM1.00KS
R4088	SM653101393	SM1.00KS
R4089	SM653101393	SM1.00KS
R4092	SM653101334	SM243.0S
R4095	SM653101481	SM8.25KS
R4097	SM653101358	SM432.0S
R4099	SM654101000	SM0S-B2P
R4100	SM654101000	SM0S-B2P
R4101	SM654101000	SM0S

PART: F9384-31 **DESC : 4 CHAN,1GHZ,1GS/S ACQUISITION BOARD**

Location	Part Number	Description
R4102	SM654101000	SM0S
R4103	SM653101334	SM243.0S
R4105	SM653101418	SM1.82KS
R4106	SM653101285	SM75.0S
R4150	SM653101347	SM332.0S
R4151	SM185657201	SM200-3313
R4200	SM653101489	SM10.0KS
R4201	SM185657500	SM500-3313
R4202	SM653101269	SM51.1S
R4203	SM185657500	SM500-3313
R4204	SM652061181	SM180-0603
R4502	SM653101330	SM221.0S
R4503	SM653101393	SM1.00KS
R4504	SM653101322	SM182.0S
R4505	SM653101393	SM1.00KS
R4507	SM653101251	SM33.2S
R4508	SM653101489	SM10.0KS
R4509	SM653101489	SM10.0KS
R4510	SM653101489	SM10.0KS
R4511	SM653101489	SM10.0KS
R4512	SM653101489	SM10.0KS
R4513	SM653101489	SM10.0KS
R4514	SM653101489	SM10.0KS
R4515	SM653101251	SM33.2S
R4516	SM653101251	SM33.2S
R4517	SM653101489	SM10.0KS
R4518	SM653101285	SM75.0S
R4519	SM653101285	SM75.0S
R4520	SM653101326	SM200.0S
R4521	SM653101326	SM200.0S
R4522	SM653101305	SM121.0S
R4523	SM653101326	SM200.0S
R4524	SM653101326	SM200.0S
R4525	SM653101281	SM68.1S
R4526	SM653101281	SM68.1S
R4527	SM653101281	SM68.1S
R4528	SM653101281	SM68.1S
R4533	SM653101305	SM121.0S
R4534	SM653101322	SM182.0S
R4535	SM653101322	SM182.0S
R4536	SM653101305	SM121.0S
R4537	SM653101305	SM121.0S

Location	Part Number	Description
R4538	SM653101322	SM182.0S
R4539	SM653101322	SM182.0S
R4540	SM653101322	SM182.0S
R4544	SM653101322	SM182.0S
R4546	SM653101305	SM121.0S
R4547	SM653101322	SM182.0S
R4548	SM653101305	SM121.0S
R4549	SM653101305	SM121.0S
R4550	SM653101305	SM121.0S
R4551	SM653101322	SM182.0S
R4552	SM653101326	SM200.0S
R4553	SM653101326	SM200.0S
R4554	SM653101326	SM200.0S
R4555	SM653101326	SM200.0S
R4556	SM653101281	SM68.1S
R4557	SM653101281	SM68.1S
R4558	SM653101281	SM68.1S
R4559	SM653101281	SM68.1S
R4560	SM653101314	SM150.0S
R4561	SM653101314	SM150.0S
R4562	SM653101314	SM150.0S
R4563	SM653101314	SM150.0S
R4564	SM653101281	SM68.1S
R4565	SM653101281	SM68.1S
R4566	SM653101281	SM68.1S
R4567	SM653101281	SM68.1S
R4568	SM653101322	SM182.0S
R4569	SM653101322	SM182.0S
R4570	SM653101269	SM51.1S
R4571	SM653101269	SM51.1S
R4572	SM653101322	SM182.0S
R4573	SM653101322	SM182.0S
R4576	SM653101269	SM51.1S
R4577	SM653101269	SM51.1S
R4578	SM653101305	SM121.0S
R4579	SM653101322	SM182.0S
R4580	SM653101322	SM182.0S
R4581	SM653101305	SM121.0S
R4583	SM653101251	SM33.2S
R4584	SM654101000	SM0S-2P
R4600	SM653101273	SM56.2S
R4601	SM653101273	SM56.2S

PART: F9384-31 **DESC : 4 CHAN,1GHZ,1GS/S ACQUISITION BOARD**

Location	Part Number	Description
R4602	SM653101308	SM130.0S
R4603	SM653101273	SM56.2S
R4604	SM653101273	SM56.2S
R4605	SM653101308	SM130.0S
R4607	SM653101281	SM68.1S
R4608	SM653101281	SM68.1S
R4610	SM653101322	SM182.0S
R4611	SM653101322	SM182.0S
R4620	SM653101308	SM130.0S
R5000	SM653101251	SM33.2S
R5001	SM653101234	SM22.1S
R5002	SM653101201	SM10.0S
R5003	SM653101251	SM33.2S
R5004	SM653101251	SM33.2S
R5005	SM653101585	SM100.0KS
R5006	168909001	900.0K-.1%500V
R5007	SM653101297	SM100.0S
R5008	SM653101418	SM1.82KS
R5010	168909001	900.0K-.1%500V
R5011	SM653101269	SM51.1S
R5012	SM653101418	SM1.82KS
R5013	SM653101401	SM1.21KS
R5014	SM653101377	SM681.0S
R5015	SM653185107	SM100.0MS
R5016	SM168659006	SM111.1K-1/oo
R5017	SM653101506	SM15.0KS
R5018	SM653101514	SM18.2KS
R5020	SM653101297	SM100.0S
R5021	SM653101354	SM392.0S
R5022	SM653101281	SM68.1S
R5023	SM653101650	SM475.0KS
R5024	SM653101665	SM681.0KS
R5025	SM653101489	SM10.0KS
R5026	SM653101585	SM100.0KS
R5027	SM653101251	SM33.2S
R5028	SM653101285	SM75.0S
R5029	SM652110904	SM900K-5/oo
R5030	SM653101297	SM100.0S
R5031	SM653101365	SM511.0S
R5032	SM653101489	SM10.0KS
R5033	SM653101281	SM68.1S
R5034	SM653101201	SM10.0S
R5035	SM653101362	SM475.0S

Location	Part Number	Description
R5036	SM653101297	SM100.0S
R5038	SM653101673	SM825.0KS
R5039	SM653101269	SM51.1S
R5040	SM653101418	SM1.82KS
R5041	SM653101269	SM51.1S
R5042	SM653101418	SM1.82KS
R5045	SM653101369	SM562.0S
R5049	SM653101369	SM562.0S
R5051	SM653101461	SM5.11KS
R5052	SM653101509	SM16.2KS
R5053	SM185457203	SM20K-1T
R5054	SM653101509	SM16.2KS
R5055	SM185457203	SM20K-1T
R5056	SM653101443	SM3.32KS
R5057	SM654101000	SM0S
R5060	SM654101000	SM0S
R5061	SM653101443	SM3.32KS
R5062	SM653101443	SM3.32KS
R5064	SM654101000	SM0S
R5066	SM654101000	SM0S
R5067	SM653101443	SM3.32KS
R5068	SM653101461	SM5.11KS
R5071	SM653101269	SM51.1S
R5072	SM653101269	SM51.1S
R5073	SM653101418	SM1.82KS
R5074	SM653101418	SM1.82KS
R5075	SM653101369	SM562.0S
R5076	SM653101369	SM562.0S
R5077	SM653101509	SM16.2KS
R5078	SM185457203	SM20K-1T
R5079	SM653101509	SM16.2KS
R5080	SM185457203	SM20K-1T
R5081	SM653101443	SM3.32KS
R5082	SM654101000	SM0S
R5084	SM654101000	SM0S
R5086	SM653101443	SM3.32KS
R5087	SM653101461	SM5.11KS
R5088	SM653101443	SM3.32KS
R5089	SM654101000	SM0S
R5091	SM654101000	SM0S
R5093	SM653101443	SM3.32KS
R5094	SM653101461	SM5.11KS
R5095	SM653101269	SM51.1S

PART: F9384-31 DESC : 4 CHAN,1GHZ,1GS/S ACQUISITION BOARD

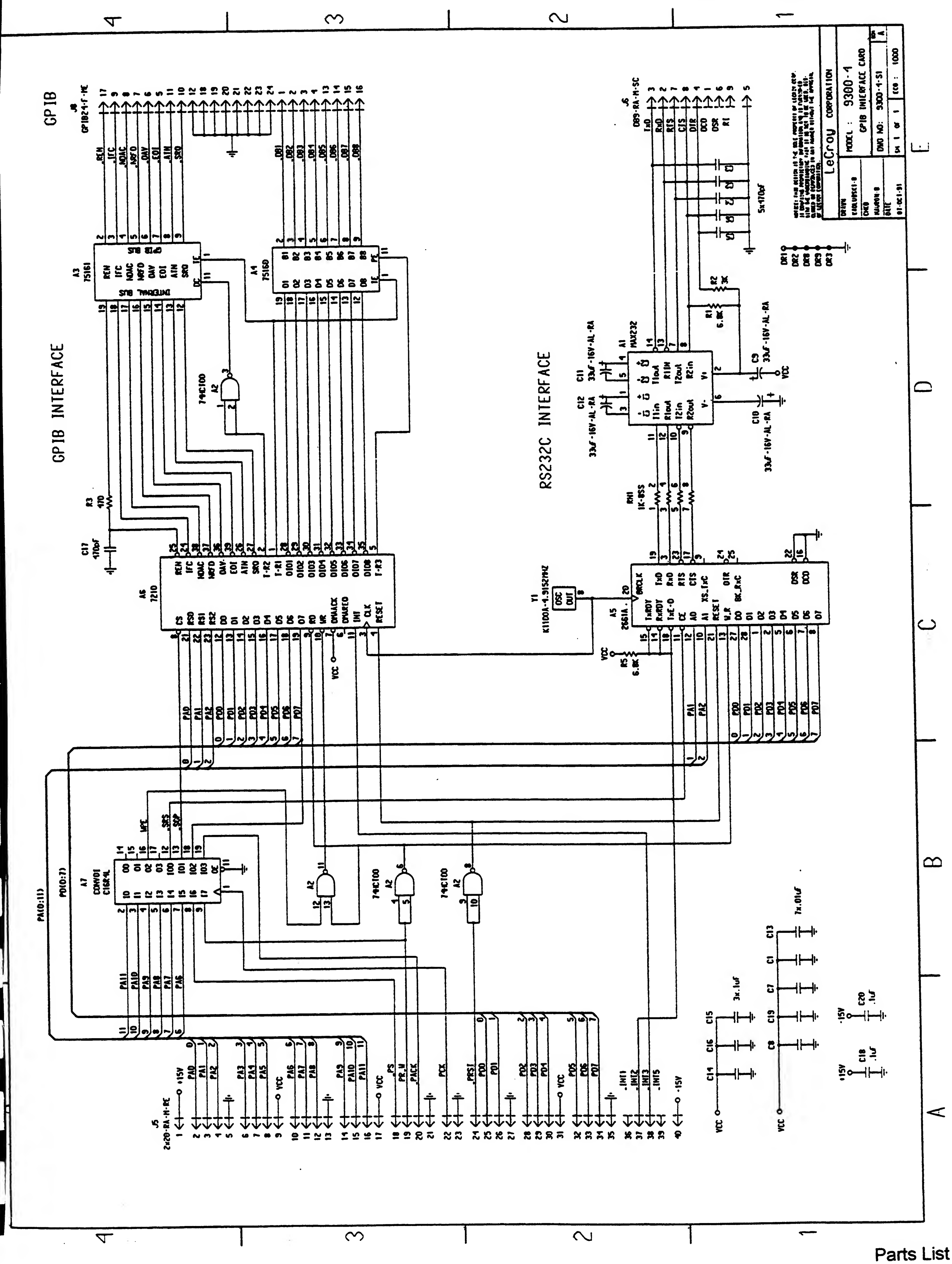
Location	Part Number	Description
R5096	SM653101269	SM51.1S
R5097	SM653101418	SM1.82KS
R5099	SM653101369	SM562.0S
R5100	SM653101326	SM200.0S
R5101	SM653101269	SM51.1S
R5103	SM653101509	SM16.2KS
R5104	SM653101326	SM200.0S
R5106	SM653101322	SM182.0S
R5107	SM653101461	SM5.11KS
R5108	SM185457203	SM20K-1T
R5109	SM653101322	SM182.0S
R5110	SM653101461	SM5.11KS
R5111	SM653101461	SM5.11KS
R5112	SM653101443	SM3.32KS
R5113	SM654101000	SM0S
R5115	SM654101000	SM0S
R5117	SM653101443	SM3.32KS
R5118	SM653101461	SM5.11KS
R5119	SM653101465	SM5.62KS
R5120	SM653101465	SM5.62KS
R5121	SM653101461	SM5.11KS
R5122	SM653101465	SM5.62KS
R5123	SM653101465	SM5.62KS
R5125	SM653101305	SM121.0S
R5126	SM168651297	SM100-1%MM
R5127	SM168651297	SM100-1%MM
R5129	SM185457502	SM5K-1T
R5130	SM653101569	SM68.1KS
R5131	SM653101450	SM3.92KS
R5132	SM653101681	SM1.00MS
R5133	SM653101461	SM5.11KS
R5134	SM653101461	SM5.11KS
R5135	SM653101461	SM5.11KS
R5136	SM653101481	SM8.25KS
R5137	SM653101443	SM3.32KS
R5139	SM653101397	SM1.10KS
R5140	SM653101393	SM1.00KS
R5141	SM653101461	SM5.11KS
R5142	SM653101461	SM5.11KS
R5143	SM653101269	SM51.1S
R5144	SM653101269	SM51.1S
R5145	SM653101269	SM51.1S
R5146	SM653101269	SM51.1S
R5147	SM653101269	SM51.1S
R5148	SM653101297	SM100.0S
R5150	SM653101297	SM100.0S
R5160	SM168651315	SM154-1/oo
R5161	SM168651315	SM154-1/oo
R5201	SM653101269	SM51.1S
R6000	SM653101251	SM33.2S
R6001	SM168659007	SM3.0K-1/oo
R6002	SM168659297	SM100-1/oo
R6003	SM168659297	SM100-1/oo
R6004	SM653101347	SM332.0S
R6005	SM653101397	SM1.10KS
R6006	SM653101251	SM33.2S
R6007	SM653101322	SM182.0S
R6008	SM653101397	SM1.10KS
R6009	SM653101373	SM619.0S
R6010	SM653101461	SM5.11KS
R6011	SM653101461	SM5.11KS
R6012	SM653101308	SM130.0S
R6013	SM653101354	SM392.0S
R6014	SM168659007	SM3.0K-1/oo
R6015	SM168659007	SM3.0K-1/oo
R6016	SM168659004	SM900-1/oo
R6017	SM168659297	SM100-1/oo
R6018	SM653101450	SM3.92KS
R6019	SM653101397	SM1.10KS
R6020	SM168659007	SM3.0K-1/oo
R6021	SM653101234	SM22.1S
R6022	SM653101297	SM100.0S
R6023	SM653101297	SM100.0S
R7000	SM653101289	SM82.5S
R7001	SM653101308	SM130.0S
R7002	SM653101308	SM130.0S
R7003	SM653101269	SM51.1S
R7004	SM653101289	SM82.5S
R7005	SM653101450	SM3.92KS
R7006	SM653101450	SM3.92KS
R7007	SM653101450	SM3.92KS
R7008	SM653101450	SM3.92KS
RL1000	430430004	RL-RP1-12
RL1001	430430004	RL-RP1-12

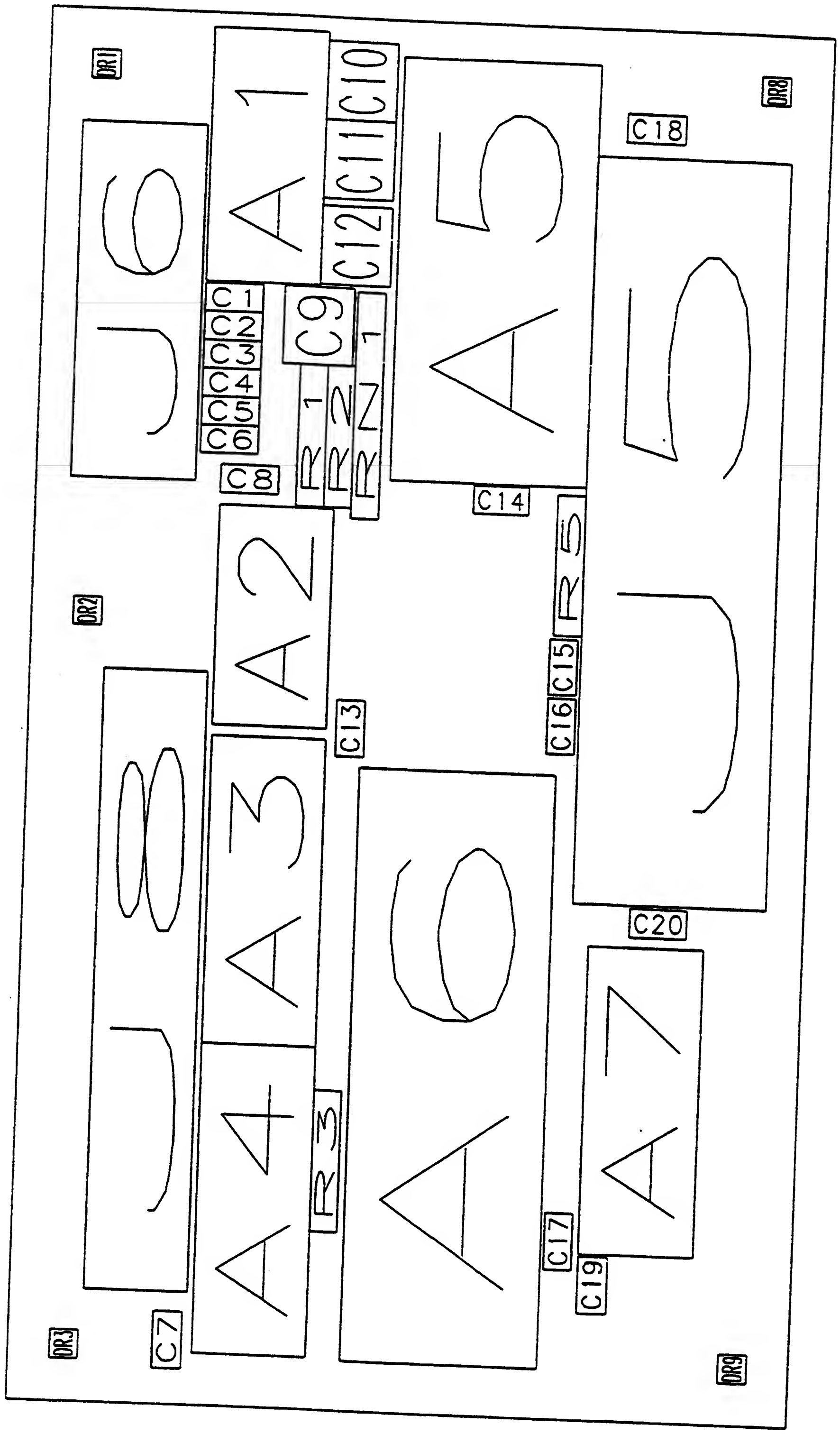
PART: F9384-31 **DESC : 4 CHAN,1GHZ,1GS/S ACQUISITION BOARD**

Location	Part Number	Description
RL1002	430430004	RL-RP1-12
RL1003	430490005	RL-RK1-12
RL1004	430430004	RL-RP1-12
RL1005	430490005	RL-RK1-12
RL1006	430430004	RL-TK1-12
RL2000	430430004	RL-RP1-12
RL2001	430430004	RL-RP1-12
RL2002	430430004	RL-RP1-12
RL2003	430490005	RL-RK1-12
RL2004	430430004	RL-RP1-12
RL2005	430490005	RL-RK1-12
RL2006	430430004	RL-TK1-12
RL3000	430430004	RL-RP1-12
RL3001	430430004	RL-RP1-12
RL3002	430430004	RL-RP1-12
RL3003	430490005	RL-RK1-12
RL3004	430430004	RL-RP1-12
RL3005	430490005	RL-RK1-12
RL3006	430430004	RL-TK1-12
RL4000	430430004	RL-RP1-12
RL4001	430430004	RL-RP1-12
RL4002	430430004	RL-RP1-12
RL4003	430490005	RL-RK1-12
RL4004	430430004	RL-RP1-12
RL4005	430490005	RL-RK1-12
RL4006	430430004	RL-TK1-12
RL5000	430490003	RL-TQ2-12
RL5001	430430004	RL-RP1-12
S1	SM654101000	SM0S-2P
TC1000	F9384-7	9384-7
TC2000	F9384-7	9384-7
TC3000	F9384-7	9384-7
TC4000	F9384-7	9384-7
TP201	454313010	2x5-ST-M-NW
TP202	454313010	2x5-ST-M-NW-
TP203	454313010	2x5-ST-M-NW-
TP700	454340002	2x1-ST-M-NW
TP710	454340002	2x1-ST-M-NW
TP720	454340002	2x1-ST-M-NW
TP730	454340002	2x1-ST-M-NW
TP740	454340002	2x1-ST-M-NW
TP750	454340002	2x1-ST-M-NW
TP760	454340002	2x1-ST-M-NW
TP770	454340002	2x1-ST-M-NW
TP800	454340002	2x1-ST-M-NW
TP1001	454312004	2x2-ST-M-NW
TP1500	454313010	2x5-ST-M-NW
TP2001	454312004	2x2-ST-M-NW
TP2500	454313010	2x5-ST-M-NW
TP2501	454312010	2x5-ST-M-NW
TP3001	454312004	2x2-ST-M-NW
TP4001	454312004	2x2-ST-M-NW
TP4500	454313010	2x5-ST-M-NW
TP5000	454340002	2x1-ST-M-NW
TP5500	454313010	2x5-ST-M-NW
TP6000	454710002	2x1-RT-M-NW
U114	C-PAD-010-4	C-PAD-010-4
U336	SM201174011	SM10EL11
U337	SM201174011	SM10EL11
U338	SM201174011	SM10EL11
U339	SM201174011	SM10EL11
U340	SM201174001	SM10EL01
U360	SM201174031	SM10EL31
U361	SM201174031	SM10EL31
U364	SM207970057	SM10EL57
U700	SM205108016	SM24LC16B
U701	SM207970057	SM10EL57
U702	SM207970057	SM10EL57
U703	SM200178002	SM74HCT02
U704	SM201574058	SM10EL58
U726	SM205618594	SM74HC594-PS
U1041	SM201174011	SM10EL11
U1045	SM201174005	SM10EL05
U1046	SM201174005	SM10EL05
U1047	SM201174005	SM10EL05
U1048	SM201174005	SM10EL05
U1054	SM201174011	SM10EL11
U1056	SM201174011	SM10EL11
U1057	SM201174011	SM10EL11
U1500	SM206884623	SM74ABT623
U1501	SM205701070	SRAM128Kx8-70
U1502	MDX622	MDX622A
U1503	HAD621	HAD621A
U1504	SM201174011	SM10EL11
U1505	SM208470347	SMLF347
U1506	SM208470347	SMLF347

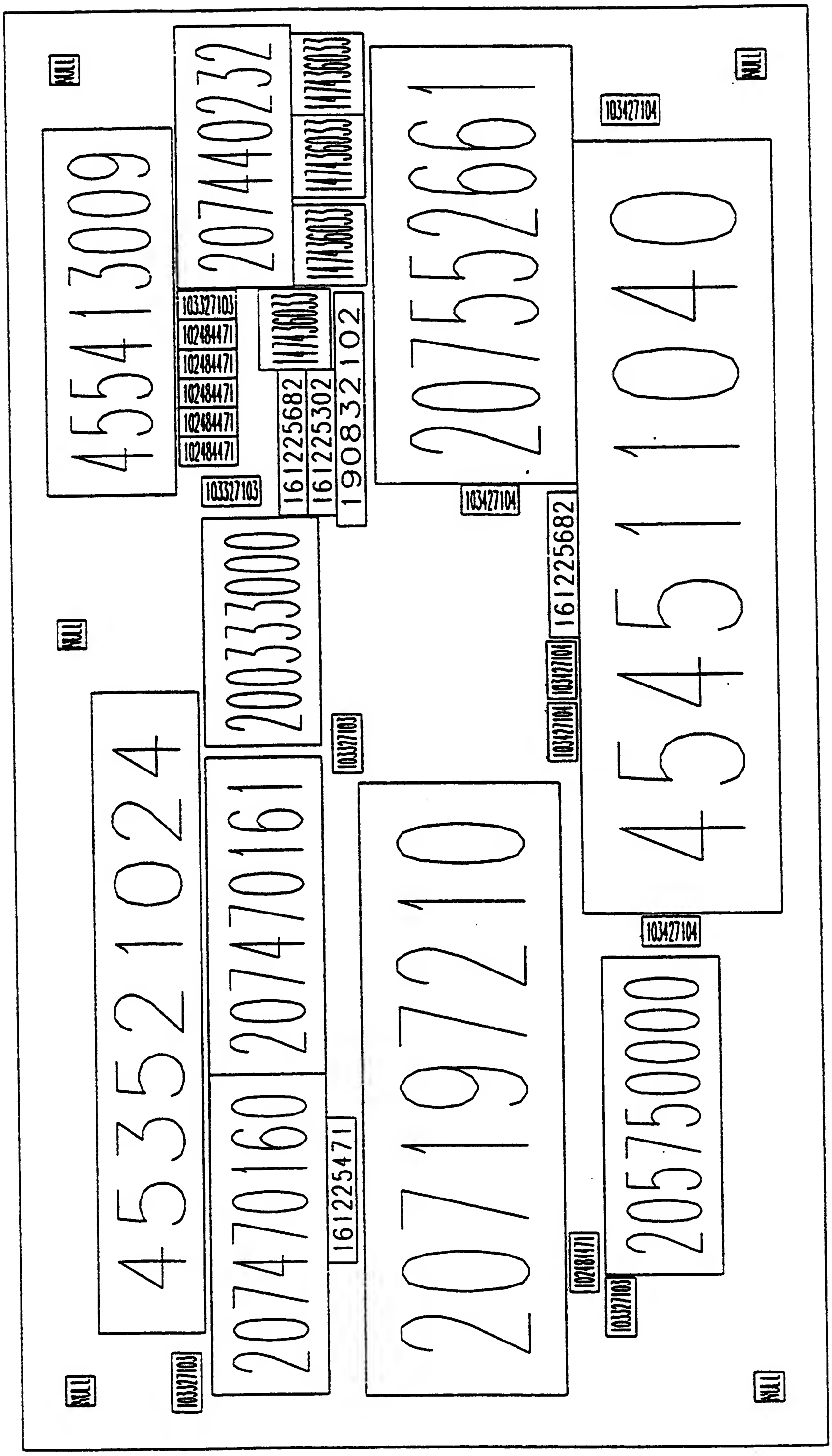
PART: F9384-31 **DESC : 4 CHAN,1GHZ,1GS/S ACQUISITION BOARD**

Location	Part Number	Description
U1508	SM208591336	SMLM336-5
U1509	SM208470353	SMLF353
U1510	SM200470573	SM74LVT573
U1511	SM200470573	SM74LVT573
U1530	SM206980056	SM100EL56
U2500	SM206884623	SM74ABT623
U2501	SM205701070	SRAM128Kx8-70
U2502	MDX622	MDX622A
U2503	HAD621	HAD621A
U2504	SM207288800	SMDAC8800
U2505	SM208470347	SMLF347
U2506	SM200170032	SM74F32
U2507	SM207970139	SM74F139
U2511	SM205618594	SM74HC594-PS
U2513	SM201174005	SM10EL05
U2514	SM201174005	SM10EL05
U2515	SM201174005	SM10EL05
U2516	SM201174005	SM10EL05
U2517	SM201174011	SM10EL11
U2518	SM201174011	SM10EL11
U2520	SM201174011	SM10EL11
U2521	SM208470347	SMLF347
U2522	SM207288800	SMDAC8800
U2523	SM206980056	SM100EL56
U2524	SM201174011	SM10EL11
U2530	SM206980056	SM100EL56
U2540	SM206980056	SM100EL56
U2541	SM201174011	SM10EL11
U2542	SM201174011	SM10EL11
U3453	SM206980056	SM100EL56
U3500	SM206884623	SM74ABT623
U3501	SM205701070	SRAM128Kx8-70
U3502	MDX622	MDX622A
U3503	HAD621	HAD621A
U3504	SM201174011	SM10EL11
U3505	SM208470347	SMLF347
U3506	SM208470347	SMLF347
U3507	SM207288800	SMDAC8800
U3512	SM201174005	SM10EL05
U3513	SM201174005	SM10EL05
U3514	SM201174005	SM10EL05
U3515	SM201174005	SM10EL05
U3516	SM201174011	SM10EL11
U3517	SM201174011	SM10EL11
U3519	SM201174011	SM10EL11
U3520	SM208470347	SMLF347
U3521	SM205618594	SM74HC594-PS
U3530	SM206980056	SM100EL56
U3540	SM206980056	SM100EL56
U3541	SM201174011	SM10EL11
U3542	SM201174011	SM10EL11
U4500	SM206884623	SM74ABT623
U4501	SM205701070	SRAM128Kx8-70
U4502	MDX622	MDX622A
U4503	HAD621	HAD621A
U4504	SM208470347	SMLF347
U4510	SM201174005	SM10EL05
U4511	SM201174005	SM10EL05
U4512	SM201174005	SM10EL05
U4513	SM201174005	SM10EL05
U4514	SM201174011	SM10EL11
U4515	SM201174011	SM10EL11
U4517	SM201174011	SM10EL11
U4520	SM200470573	SM74LVT573
U4521	SM200470573	SM74LVT573
U4522	SM200170032	SM74F32
Y700	311210000	OSC-18D10MHz
Y5001	SM311414318	SM14.31818MHz

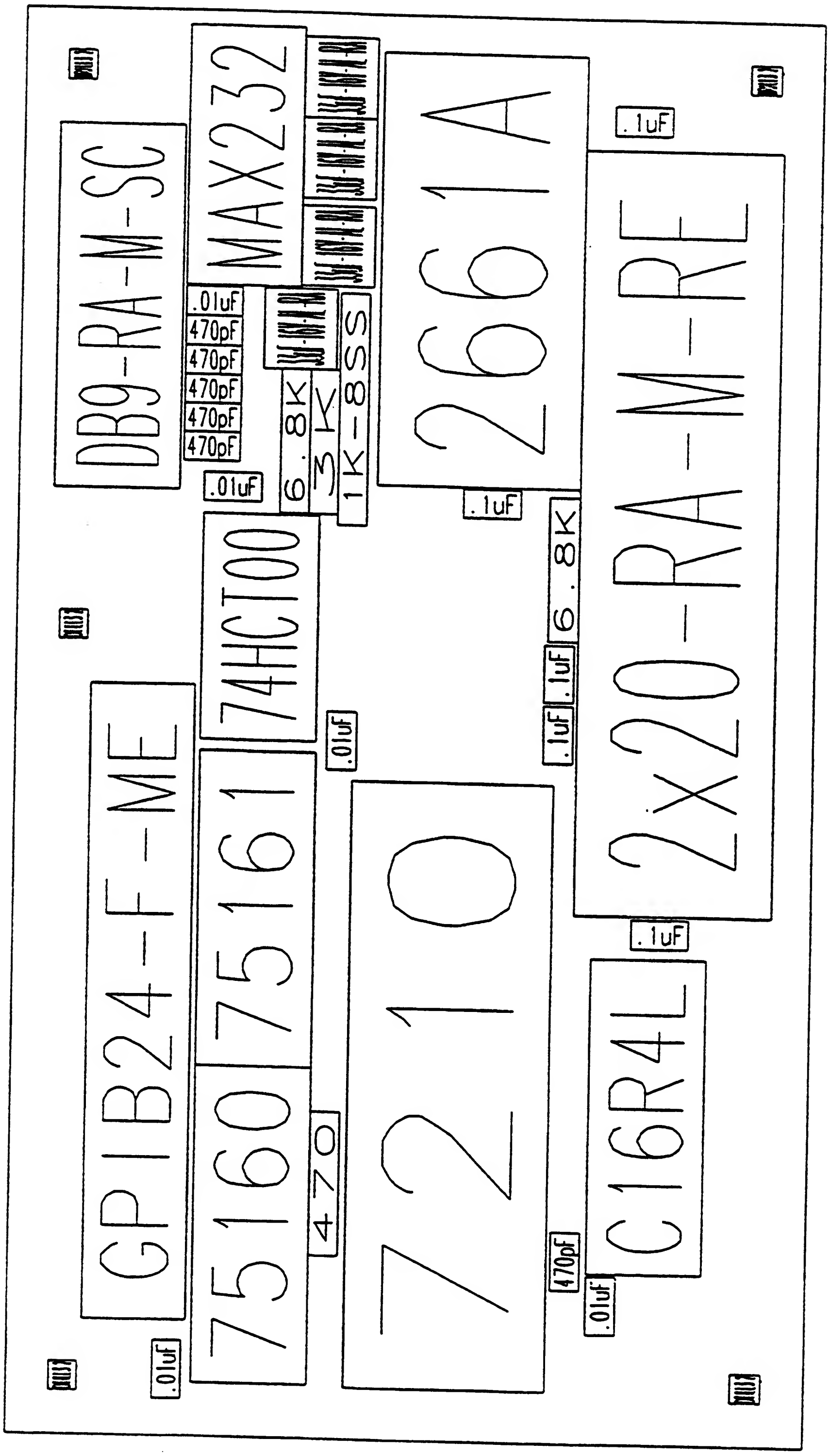

GPIB INTERFACE
GPIB
J8 GPIB24-F-ME
A3 75161
A4 75160
A6 7210
A2 74HC00
R3 470
C17 470pF
RS232C INTERFACE
J6 DB9-RA-M-SC
A1 MAX232
A5 2661A
Y1 K1100A-4.9152MHZ
RN1 1K-BSS
R1 6.8K
R2 3K
R5 6.8K
C9 33uF-16V-AL-RA
C10 33uF-16V-AL-RA
C11 33uF-16V-AL-RA
C12 33uF-16V-AL-RA
5x470pF
A7 CONV01 C16R4L
PA(0:11)
PD(0:7)
J5 2x20-RA-M-RE
3x.1uF
7x.01uF
C18 .1uF
C20 .1uF
+15V
-15V
VCC
LeCroy CORPORATION
MODEL : 9300-1
GPIB INTERFACE CARD
DWG NO: 9300-1-S1
SH 1 OF 1
ECO : 1000
REV A
DRAWN
CHKD
DATE
01-OCT-91
DR1
DR2
DR8
DR9
DR3


DR1
DR2
DR3
DR8
DR9
J6
J8
J5
A1
A2
A3
A4
A5
A6
A7
C1
C2
C3
C4
C5
C6
C7
C8
C9
C10
C11
C12
C13
C14
C15
C16
C17
C18
C19
C20
R1
R2
Z1
R3
R5

9300-4 REV:D


NULL
4554130009
2074402232
2075526661
103427104
4545111040
103327103
102484471
161225682
161225302
190832102
103427104
161225682
2003330000
NULL
4535521024
2074470161
2071972210
103427104
2057500000
2074470160
161225471
102484471
103327103
103327103
NULL
NULL

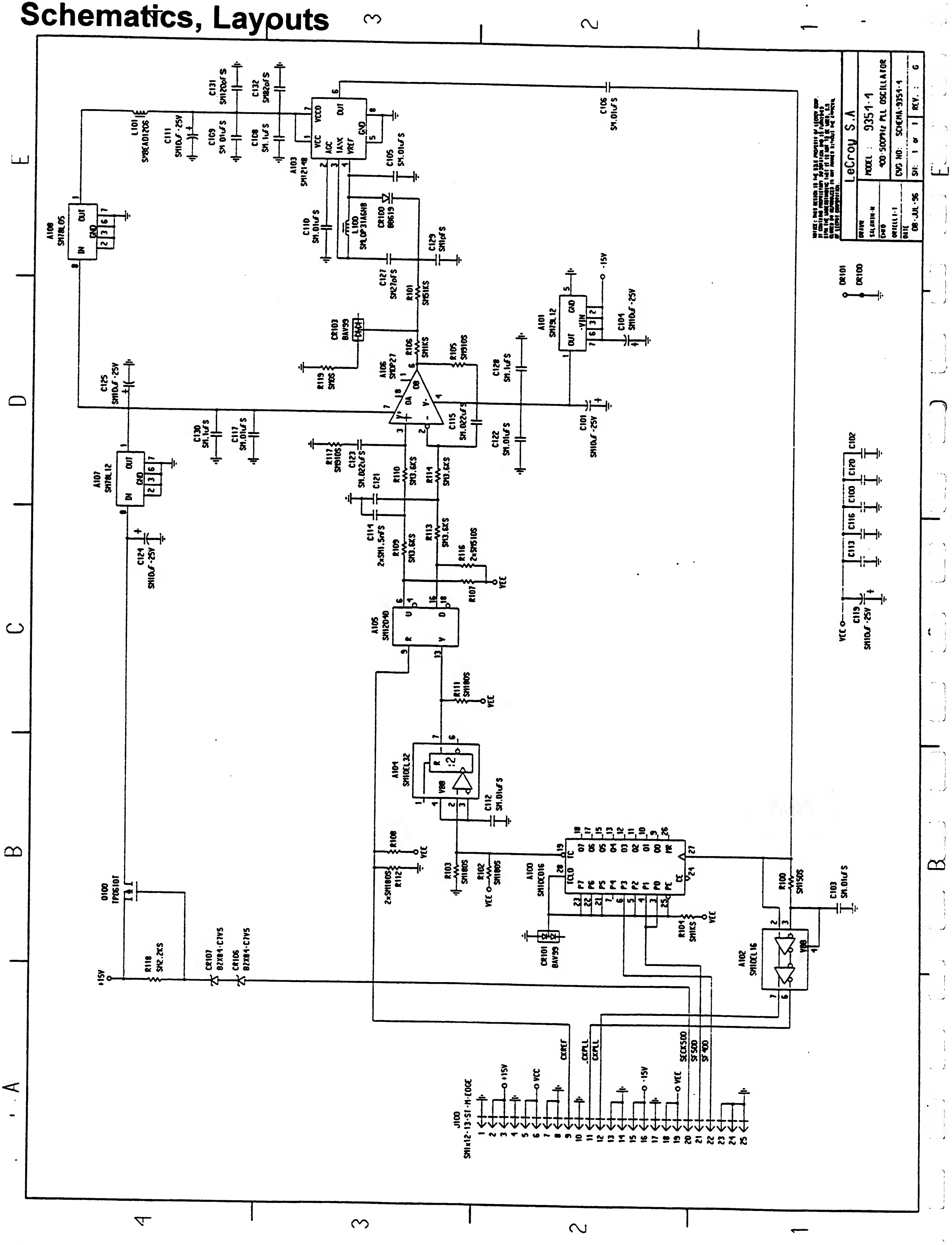
9300-4 REV:D

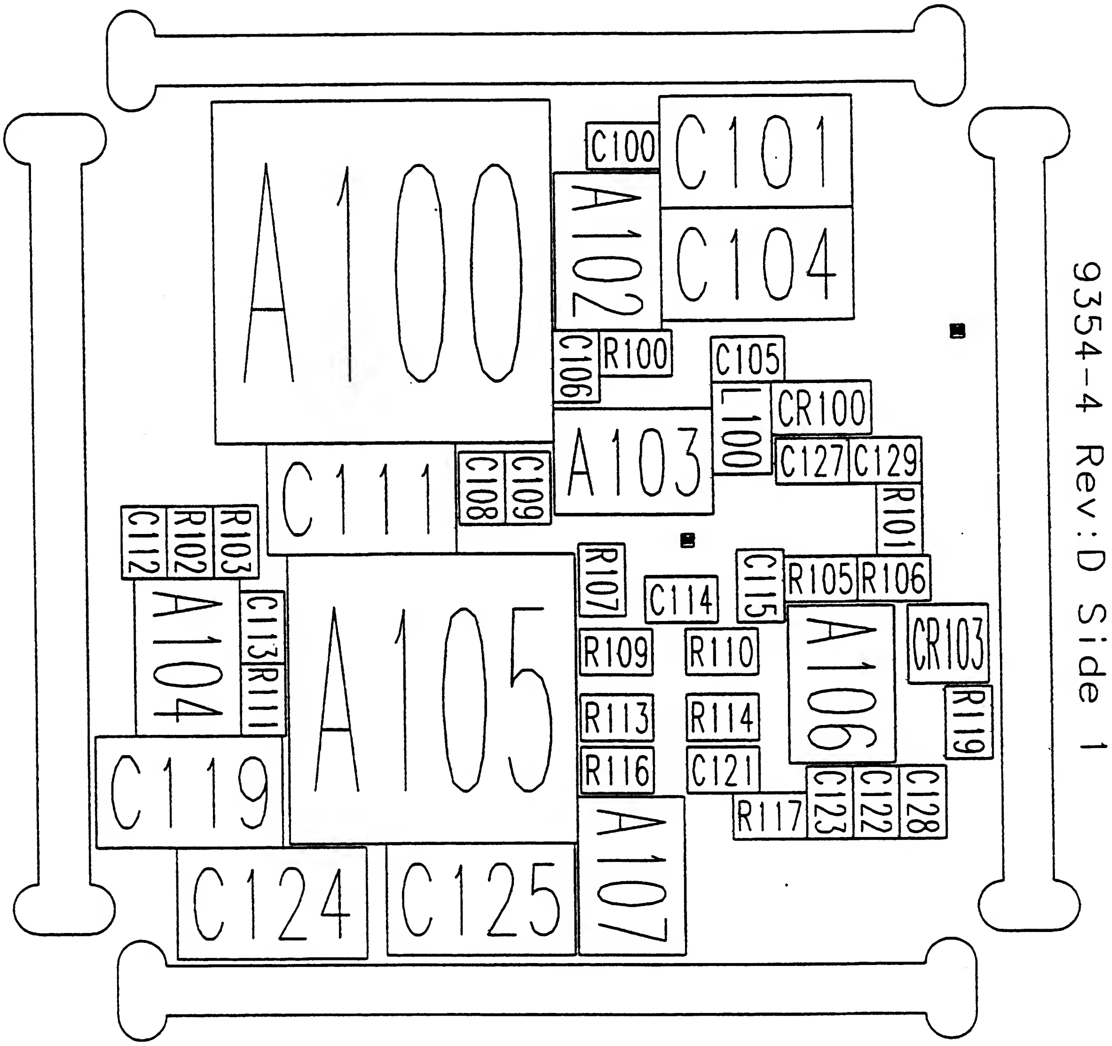

DB9-RA-M-SC
MAX232
2661A
2X20-RA-M-RE
GPIB24-F-ME
75161
75160
74HCT00
7210
C16R4L
.01uF
470pF
470pF
470pF
470pF
470pF
.01uF
6.8K
3K
1K-8SS
.1uF
.1uF
6.8K
.1uF
.1uF
.01uF
470
.1uF
470pF
.01uF
.01uF

9300-4 REV:D

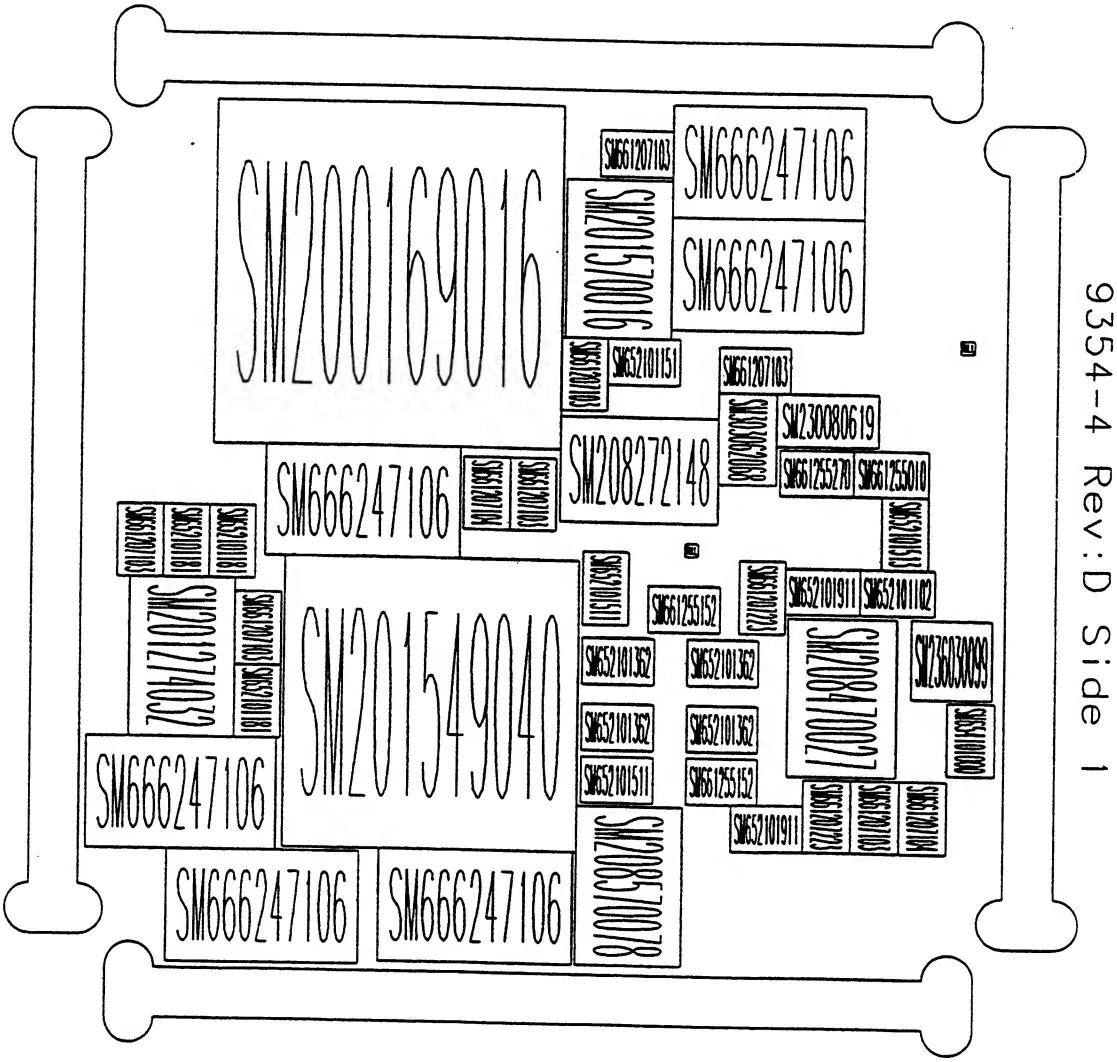
PART: F9300-4 **DESC : GPIB & RS232 Card**

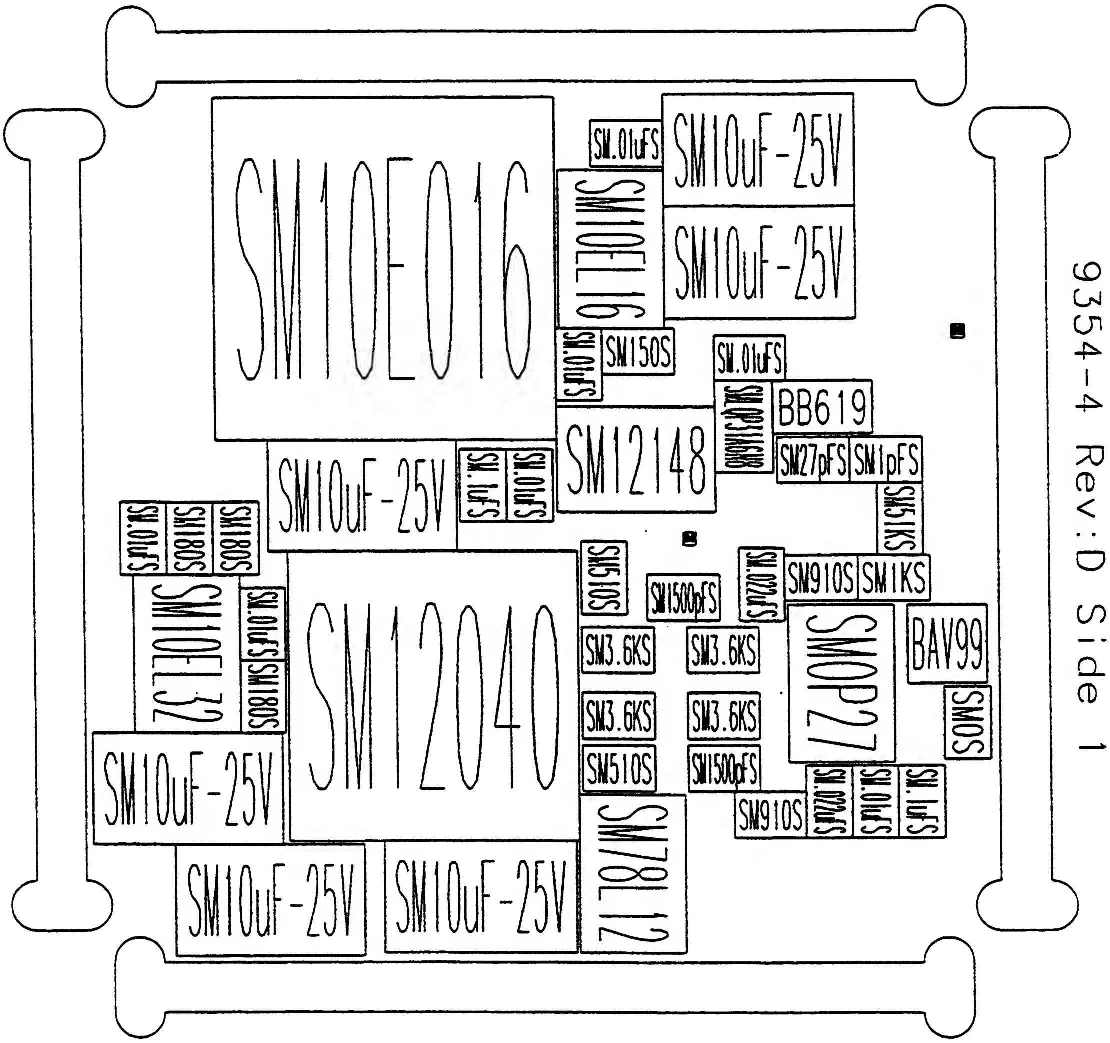
Location	Part Number	Description
A1	207440232	MAX232
A2	200333000	74HCT00
A3	207470161	75161
A4	207470160	75160
A5	207552661	2661A
A6	207197210	7210
A7	205750000	C16R4L
C1	103327103	.01uF
C2	102484471	470pF
C3	102484471	470pF
C4	102484471	470pF
C5	102484471	470pF
C6	102484471	470pF
C7	103327103	.01uF
C8	103327103	.01uF
C9	147436033	33uF-16V
C10	147436033	33uF-16V
C11	147436033	33uF-16V
C12	147436033	33uF-16V
C13	103327103	01uF
C14	103427104	.1uF
C15	103427104	.1uF
C16	103427104	.1uF
C17	102484471	470pF
C18	103427104	.1uF
C19	103327103	.01uF
C20	103427104	.1uF
J5	454511040	2x20-RA-M-RE
J6	455413009	DB9-RA-M-SC
J8	453521024	GPIB24-F-ME
R1	161225682	6.8K
R2	161225302	3K
R3	161225471	470
R5	161225682	6.8K
RN1	190832102	1K-8SS

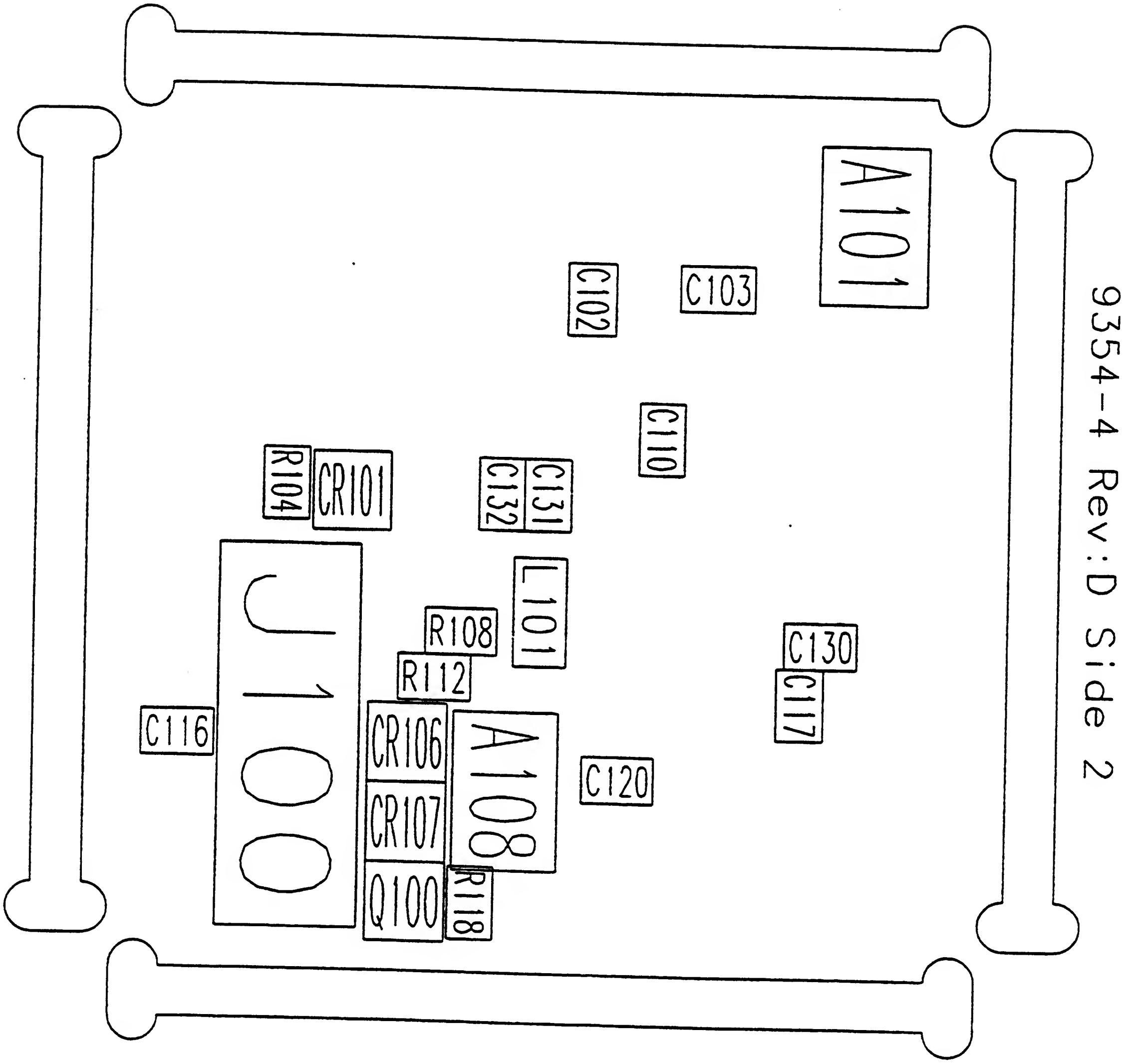

LeCroy S.A
MODEL : 9351-1
400-500MHz PLL OSCILLATOR
DWG NO: SCHEMA-9354-1
SH: 1 of 1
REV. : G
DRAWN SALAMIN-N
CHKD ORIELLI-1
DATE 08-JUL-96
A108 SM78L05
A107 SM78L12
A101 SM79L12
A103 SM1214B
A106 SMOP27
A105 SM12040
A104 SM10EL32
A100 SM10E016
A102 SM10EL16
Q100 TPD5101
L101 SMBEAD1206
L100 SMLOP31A6N8
CR100 BB619
CR103 BAV99
CR101 BAV99
CR107 BZX84-C7V5
CR106 BZX84-C7V5
R118 SM2.2KS
J100 SM1x12-13-S1-M-EDGE
CKREF
CKPLL
SECK500
SF500
SF400
+15V
-15V
VCC
VEE
DR101
DR100
A
B
C
D
E
1
2
3
4

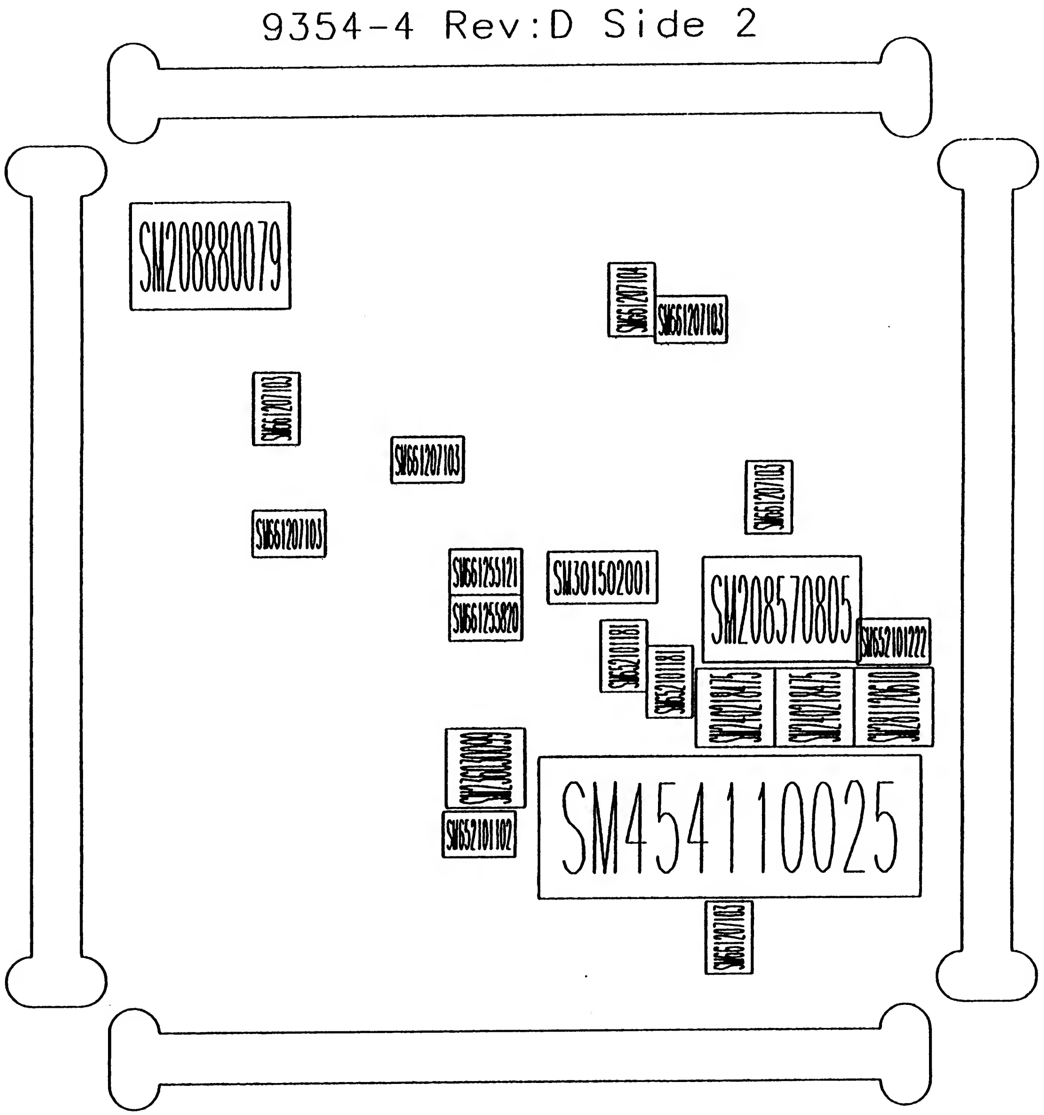

A100
C100
C101
A102
C104
C106
R100
C105
L100
CR100
A103
C127
C129
C111
C108
C109
R101
C112
R102
R103
R107
C114
C115
R105
R106
A104
C113
R111
A105
R109
R110
A106
CR103
R113
R114
R119
C119
R116
C121
C123
C122
C128
R117
A107
C124
C125
9354-4 Rev:D Side 1

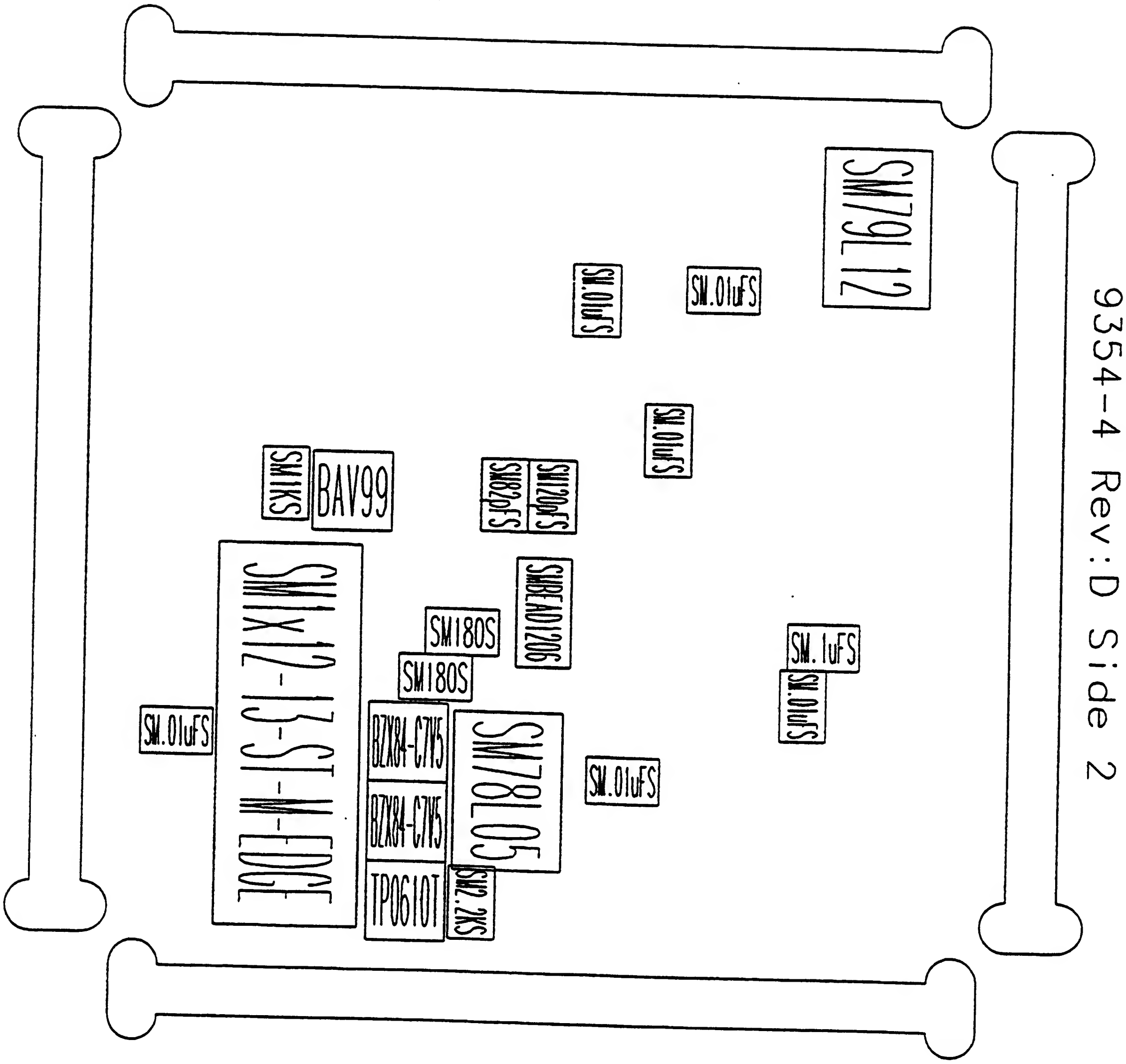
Schematics, Layouts




9354-4 Rev:D Side 1
SM10E016
SM.01uFS
SM10uF-25V
SM10uF-25V
SM10EL16
SM.01uFS
SM150S
SM.01uFS
BB619
SM12148
SM27pFS
SM1pFS
SM51KS
SM10uF-25V
SM.1uFS
SM.01uFS
SM.01uFS
SM180S
SM180S
SM10EL32
SM.01uFS
SM180S
SM12040
SM510S
SM1500pFS
SM.022uFS
SM910S
SM1KS
SM0P27
BAV99
SM0S
SM3.6KS
SM3.6KS
SM3.6KS
SM3.6KS
SM510S
SM1500pFS
SM910S
SM.022uFS
SM.01uFS
SM.1uFS
SM10uF-25V
SM10uF-25V
SM10uF-25V
SM78L12

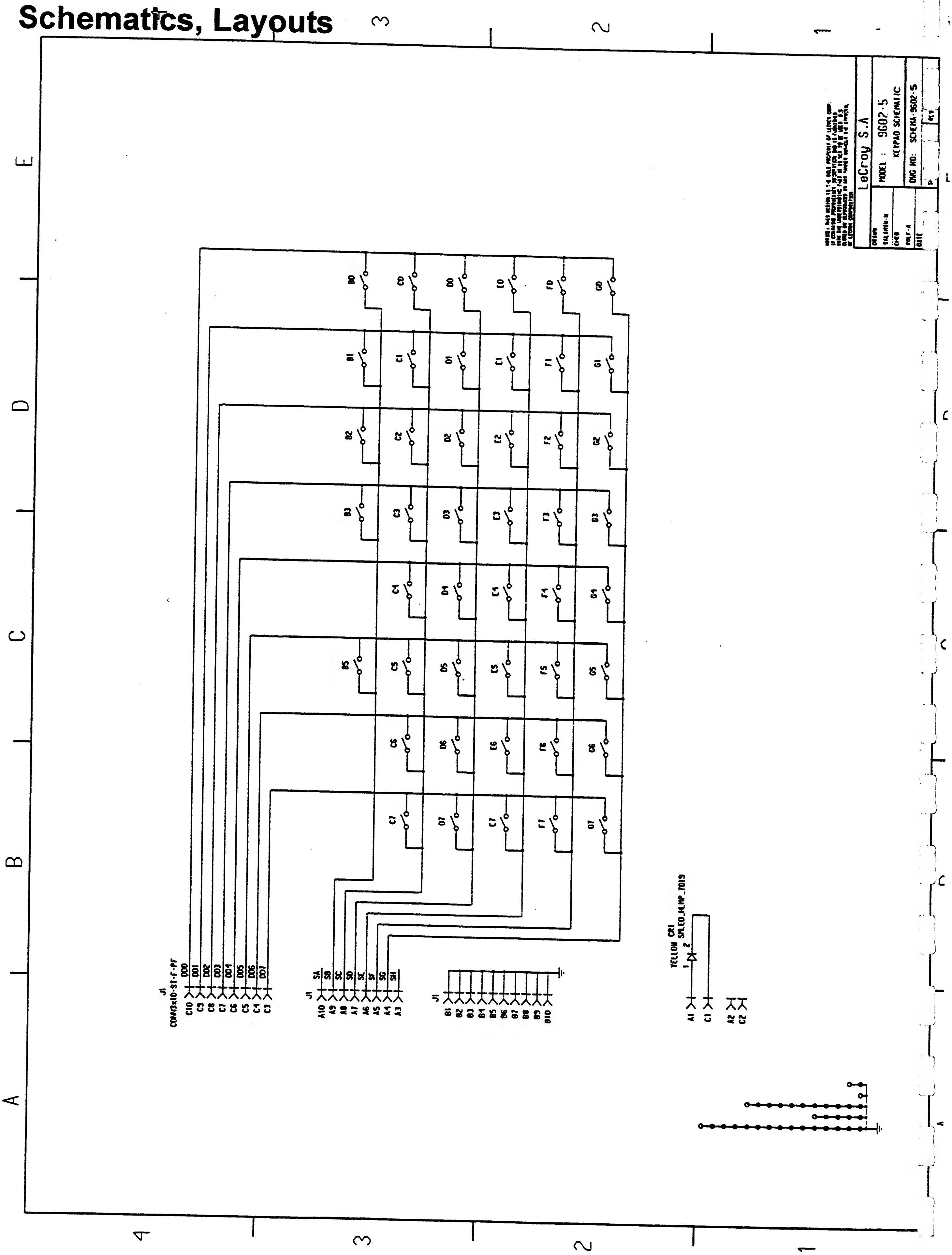

9354-4 Rev:D Side 2
A101
C103
C102
C110
C131
C132
CR101
R104
L101
R108
R112
C130
C117
J100
C116
CR106
CR107
Q100
A108
R118
C120

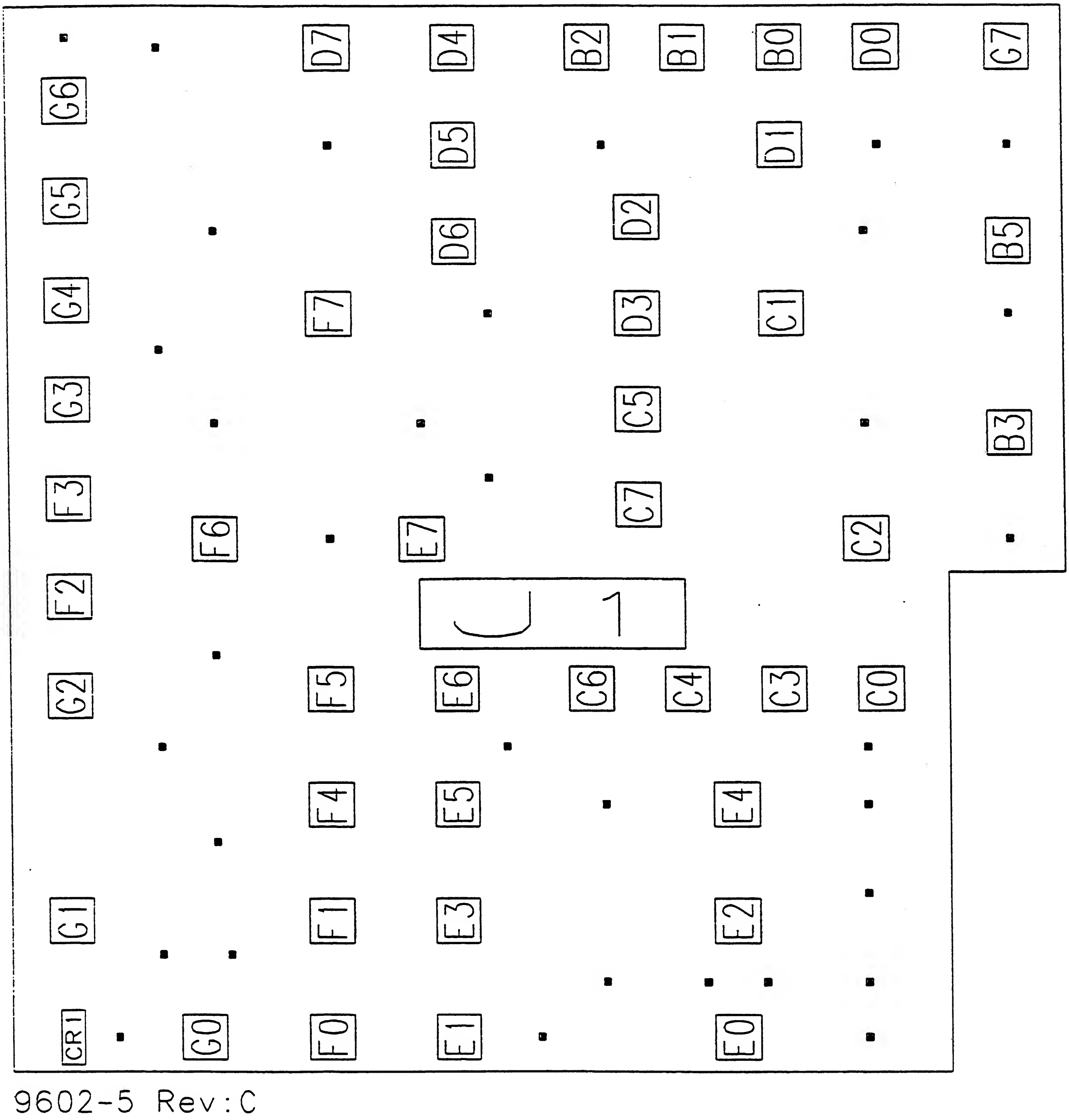

9354-4 Rev:D Side 2
SM208880079
SM661207104
SM661207103
SM661207103
SM661207103
SM661207103
SM661207103
SM661255121
SM661255820
SM301502001
SM208570805
SM652101222
SM652101181
SM652101181
SM240218475
SM240218475
SM281120610
SM236030099
SM652101102
SM454110025
SM661207103

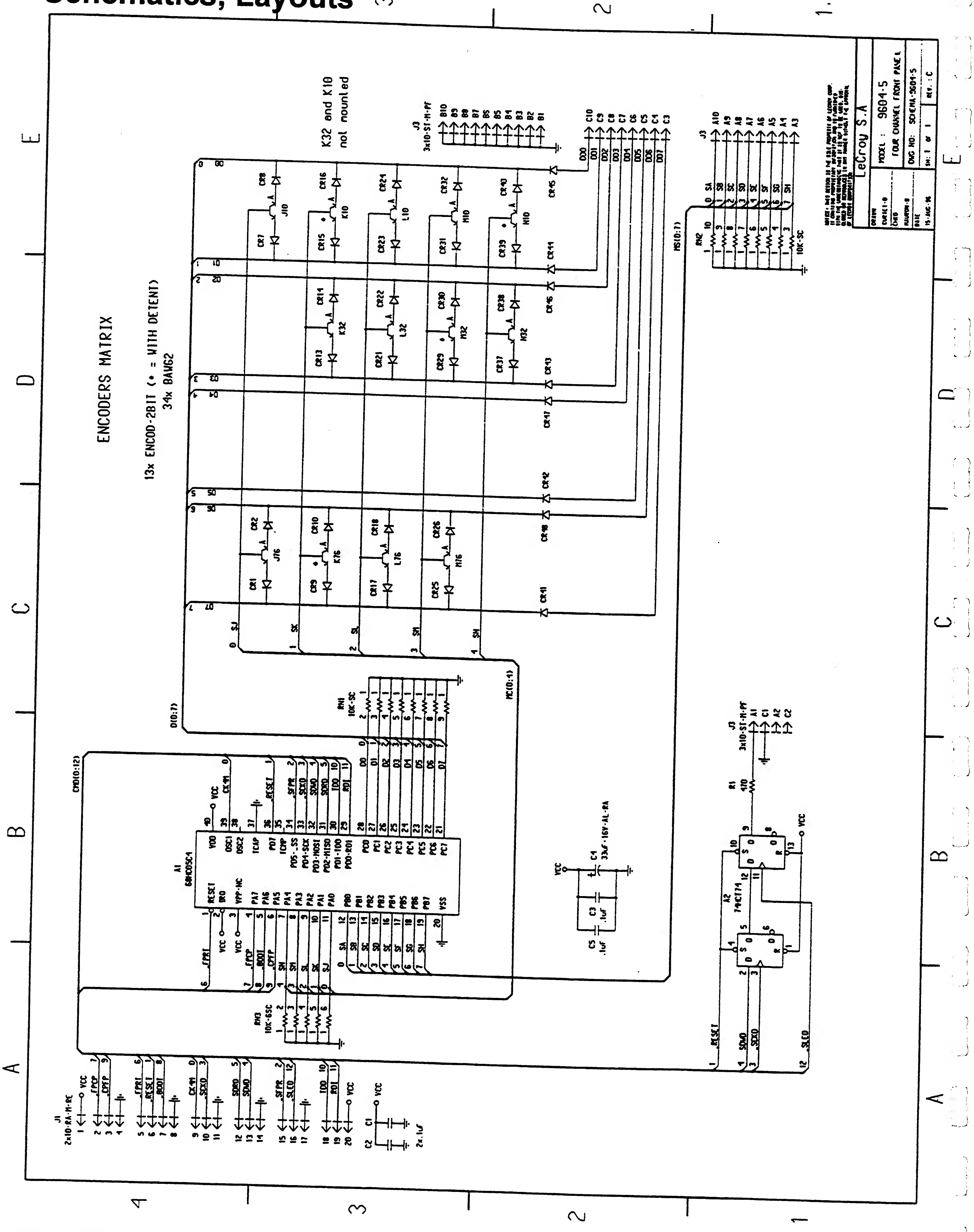

9354-4 Rev:D Side 2
SM79L12
SM.01uFS
SM.01uFS
SM.01uFS
SM120pFS
SM82pFS
SM1KS
BAV99
SMBEAD1206
SM180S
SM180S
SM.1uFS
SM.01uFS
SM.01uFS
SM1x12-13-ST-M-EDGE
BZX84-C7V5
BZX84-C7V5
TP0610T
SM78L05
SM2.2KS
SM.01uFS

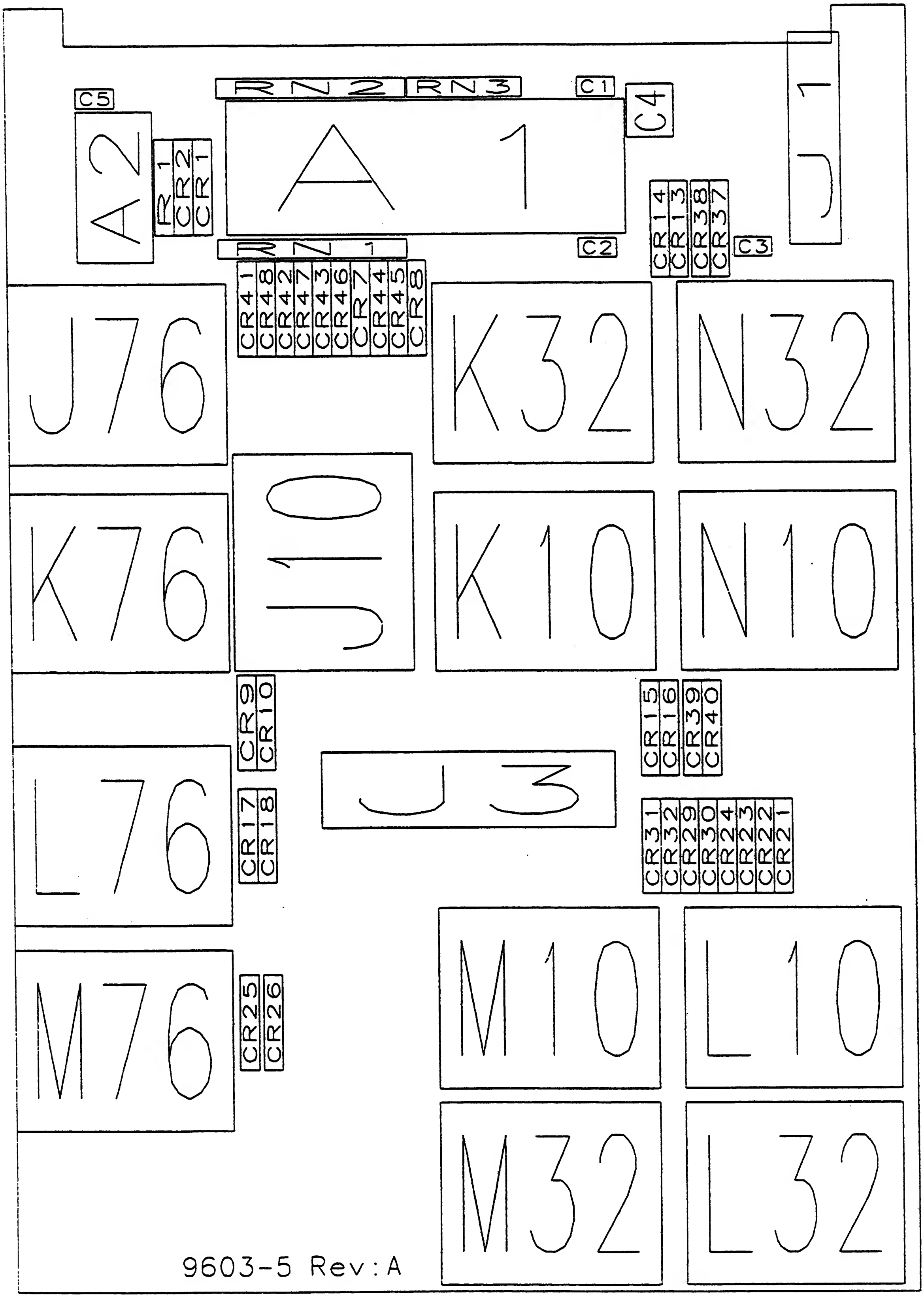
PART: F9354-4 **DESC : Time Base Card**

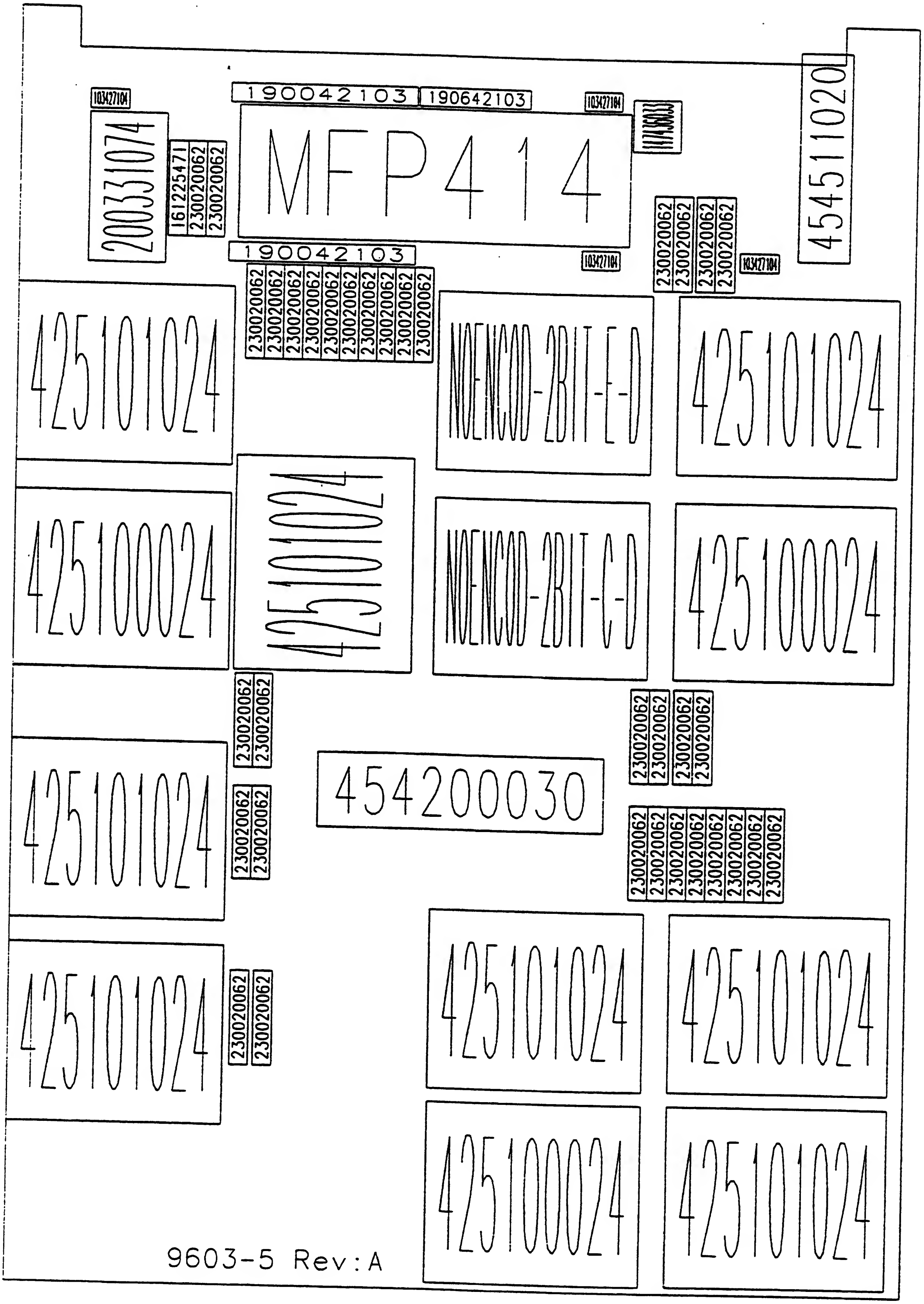
Location	Part Number	Description
A100	SM200169016	SM10E016
A101	SM208880079	SM79L12
A102	SM201570016	SM10EL16
A103	SM208272148	SM12148
A104	SM201274032	SM10EL32
A105	SM201549040	SM12040
A106	SM208470027	SMOP27
A107	SM208570078	SM78L12
A108	SM208570805	SM78L05
C100	SM661207103	SM.01uFS
C101	SM666247106	SM10uF-25V
C102	SM661207103	SM.01uFS
C103	SM661207103	SM.01uFS
C104	SM666247106	SM10uF-25V
C105	SM661207103	SM.01uFS
C106	SM661207103	SM.01uFS
C108	SM661207104	SM.1uFS
C109	SM661207103	SM.01uFS
C110	SM661207103	SM.01uFS
C111	SM666247106	SM10uF-25V
C112	SM661207103	SM.01uFS
C113	SM661207103	SM.01uFS
C114	SM661255152	SM1500pFS
C115	SM661207223	SM.022uFS
C116	SM661207103	SM.01uFS
C117	SM661207103	SM.01uFS
C119	SM666247106	SM10uF-25V
C120	SM661207103	SM.01uFS
C121	SM661255152	SM1500pFS
C122	SM661207103	SM.01uFS
C123	SM661207223	SM.022uFS
C124	SM666247106	SM10uF-25V
C125	SM666247106	SM10uF-25V
C127	SM661255270	SM27pFS
C128	SM661207104	SM.1uFS
C129	SM661255010	SM1pFS
C130	SM661207104	SM.1uFS
C131	SM661255121	SM120pFS
C132	SM661255820	SM82pFS
CR100	SM230080619	BB619
CR101	SM236030099	BAV99
CR103	SM236030099	BAV99
CR106	SM240218475	BZX84-C7V5
CR107	SM240218475	BZX84-C7V5
J100	SM454110025	SM1x12
L100	SM303062068	SMLQP31A6N8
L101	SM301502001	SMBEAD1206
Q100	SM281120610	TP0610T
R100	SM652101151	SM150S
R101	SM652101513	SM51KS
R102	SM652101181	SM180S
R103	SM652101181	SM180S
R104	SM652101102	SM1KS
R105	SM652101911	SM910S
R106	SM652101102	SM1KS
R107	SM652101511	SM510S
R108	SM652101181	SM180S
R109	SM652101362	SM3.6KS
R110	SM652101362	SM3.6KS
R111	SM652101181	SM180S
R112	SM652101181	SM180S
R113	SM652101362	SM3.6KS
R114	SM652101362	SM3.6KS
R116	SM652101511	SM510S
R117	SM652101911	SM910S
R118	SM652101222	SM2.2KS
R119	SM654101000	SM0S

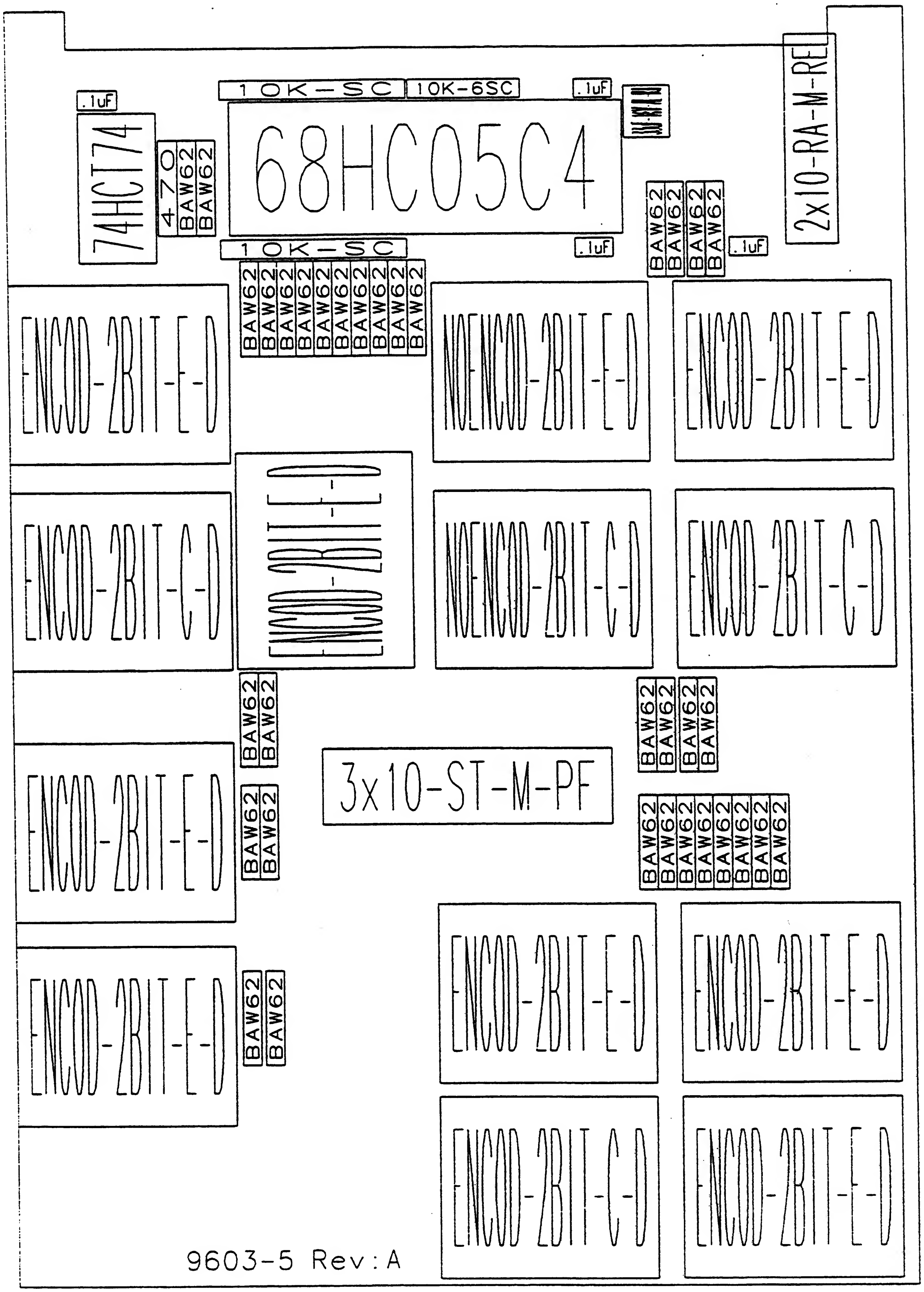

LeCroy S.A
MODEL : 9602-5
KEYPAD SCHEMATIC
DWG NO: SCHEMA-9602-5
REV
DRAWN
SALAMIN-N
CHKD
POLF-A
DATE
J1
CON13x10-ST-F-PF
C10 C9 C8 C7 C6 C5 C4 C3
D00 D01 D02 D03 D04 D05 D06 D07
A10 A9 A8 A7 A6 A5 A4 A3
SA SB SC SD SE SF SG SH
B1 B2 B3 B4 B5 B6 B7 B8 B9 B10
YELLOW CR1
SPLED_HLMP_7019
A1 C1 A2 C2
B0 C0 D0 E0 F0 G0
B1 C1 D1 E1 F1 G1
B2 C2 D2 E2 F2 G2
B3 C3 D3 E3 F3 G3
C4 D4 E4 F4 G4
B5 C5 D5 E5 F5 G5
C6 D6 E6 F6 G6
C7 D7 E7 F7 G7
E D C B A
1 2 3 4


D7
D4
B2
B1
B0
D0
G7
G6
D5
D1
G5
D6
D2
B5
G4
F7
D3
C1
G3
C5
B3
F3
F6
E7
C7
C2
F2
J1
G2
F5
E6
C6
C4
C3
C0
F4
E5
E4
G1
F1
E3
E2
CR1
G0
F0
E1
E0
9602-5 Rev:C


ENCODERS MATRIX
13x ENCOD-2BIT (• = WITH DETENT)
34x BAW62
K32 and K10 not mounted
A1 68HC05C4
A2 74HC174
RN1 10K-SC
RN2 10K-SC
RN3 10K-6SC
R1 470
C4 33uF-16V-AL-RA
C3 .1uF
C5 .1uF
C1 C2 2x.1uF
J1 2x10-RA-M-RE
J3 3x10-ST-M-PF
LeCroy S.A
MODEL : 9604-5
FOUR CHANNEL FRONT PANEL
DWG NO: SCHEMA-9604-5
REV. : C
15-AUG-96


C5
RN2
RN3
C1
C4
J1
A2
R1
CR2
CR1
A1
CR14
CR13
CR38
CR37
C3
RN1
C2
CR41
CR48
CR42
CR47
CR43
CR46
CR7
CR44
CR45
CR8
J76
K32
N32
J10
K76
K10
N10
CR9
CR10
CR15
CR16
CR39
CR40
J3
L76
CR17
CR18
CR31
CR32
CR29
CR30
CR24
CR23
CR22
CR21
M76
CR25
CR26
M10
L10
M32
L32
9603-5 Rev:A


103427104
190042103
190642103
103427104
200331074
161225471
230020062
230020062
MFP414
454511020
190042103
103427104
230020062
230020062
230020062
230020062
103427104
230020062
230020062
230020062
230020062
230020062
230020062
230020062
230020062
230020062
230020062
425101024
NOENCOD-2BIT-E-D
425101024
425100024
425101024
NOENCOD-2BIT-C-D
425100024
230020062
230020062
230020062
230020062
425101024
454200030
230020062
230020062
230020062
230020062
230020062
230020062
230020062
230020062
230020062
230020062
230020062
230020062
425101024
230020062
230020062
425101024
425101024
425100024
425101024
9603-5 Rev:A

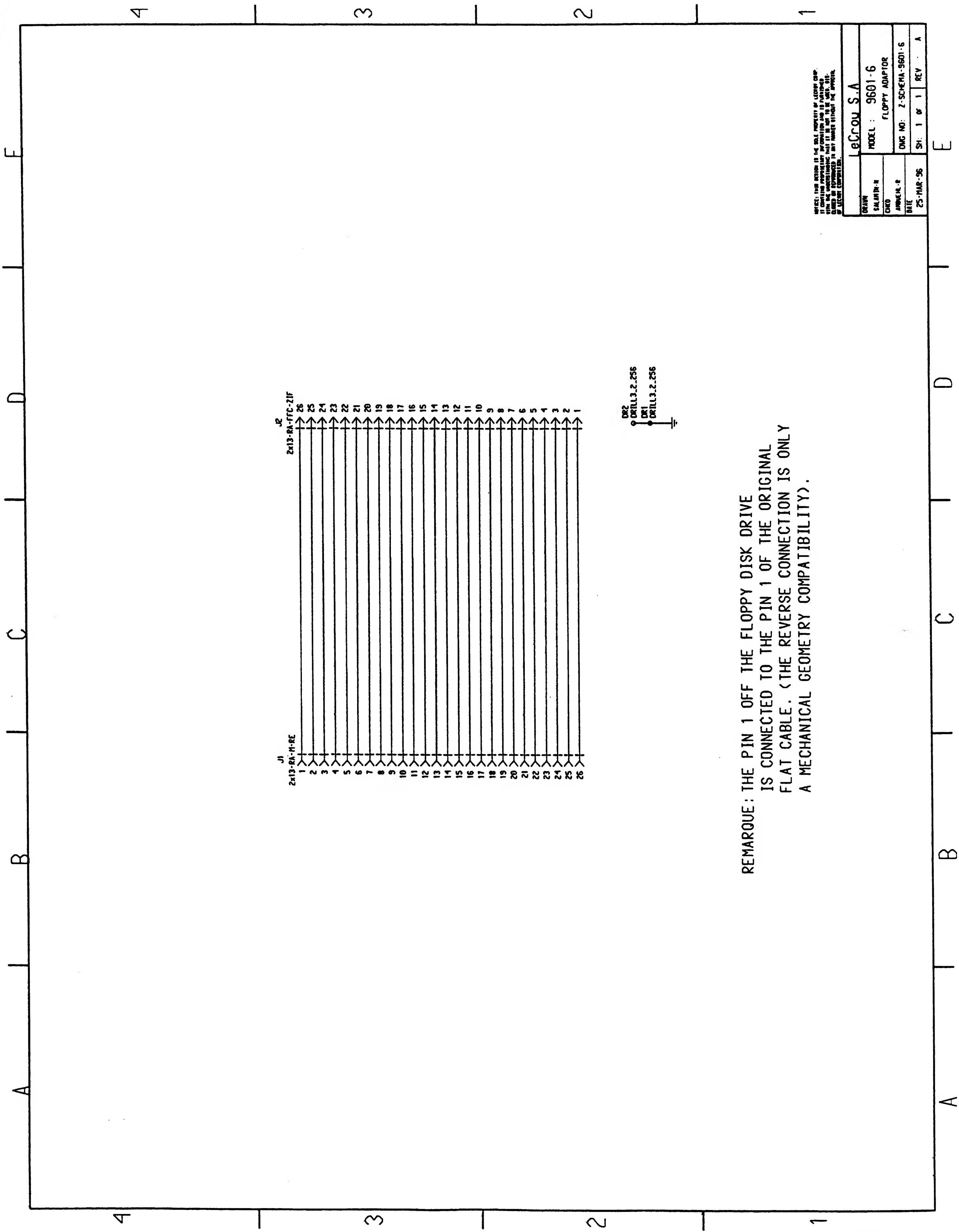

10K-SC
10K-6SC
.1uF
.1uF
74HCT74
470
BAW62
BAW62
68HC05C4
2x10-RA-M-RE
BAW62
BAW62
BAW62
BAW62
10K-SC
.1uF
.1uF
BAW62
BAW62
BAW62
BAW62
BAW62
BAW62
BAW62
BAW62
BAW62
BAW62
ENCOD-2BIT-E-D
NOENCOD-2BIT-E-D
ENCOD-2BIT-E-D
ENCOD-2BIT-C-D
ENCOD-2BIT-E-D
NOENCOD-2BIT-C-D
ENCOD-2BIT-C-D
BAW62
BAW62
BAW62
BAW62
BAW62
BAW62
3x10-ST-M-PF
ENCOD-2BIT-E-D
BAW62
BAW62
BAW62
BAW62
BAW62
BAW62
BAW62
BAW62
BAW62
BAW62
ENCOD-2BIT-E-D
BAW62
BAW62
ENCOD-2BIT-E-D
ENCOD-2BIT-E-D
ENCOD-2BIT-C-D
ENCOD-2BIT-E-D
9603-5 Rev:A

PART: F9602-5 **DESC : Front Panel Keypad**

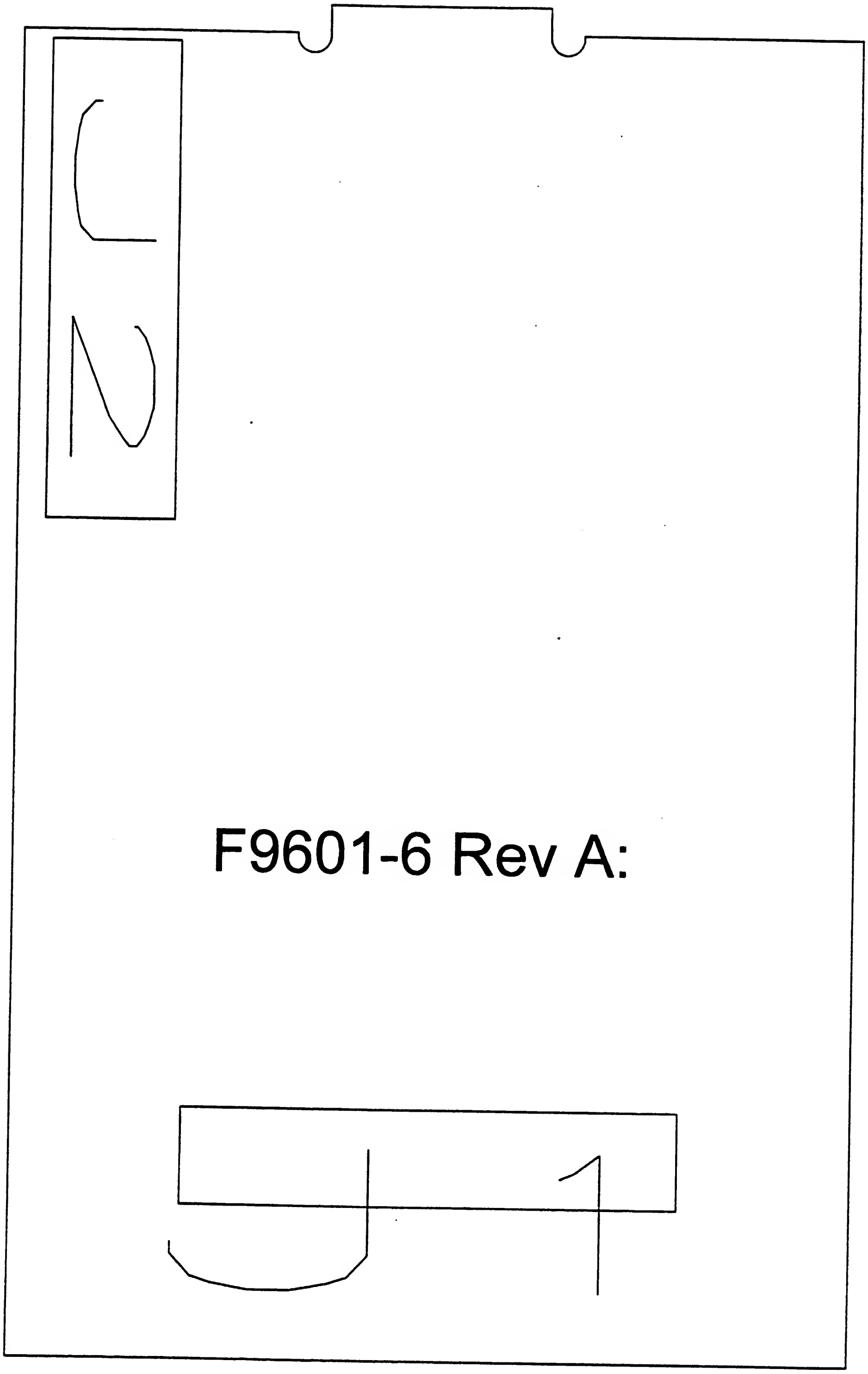
Location	Part Number	Description
CR1	SMLEDP7019	HLMP_7019
J1	3x10-ST-F	CONN3x10-ST-F

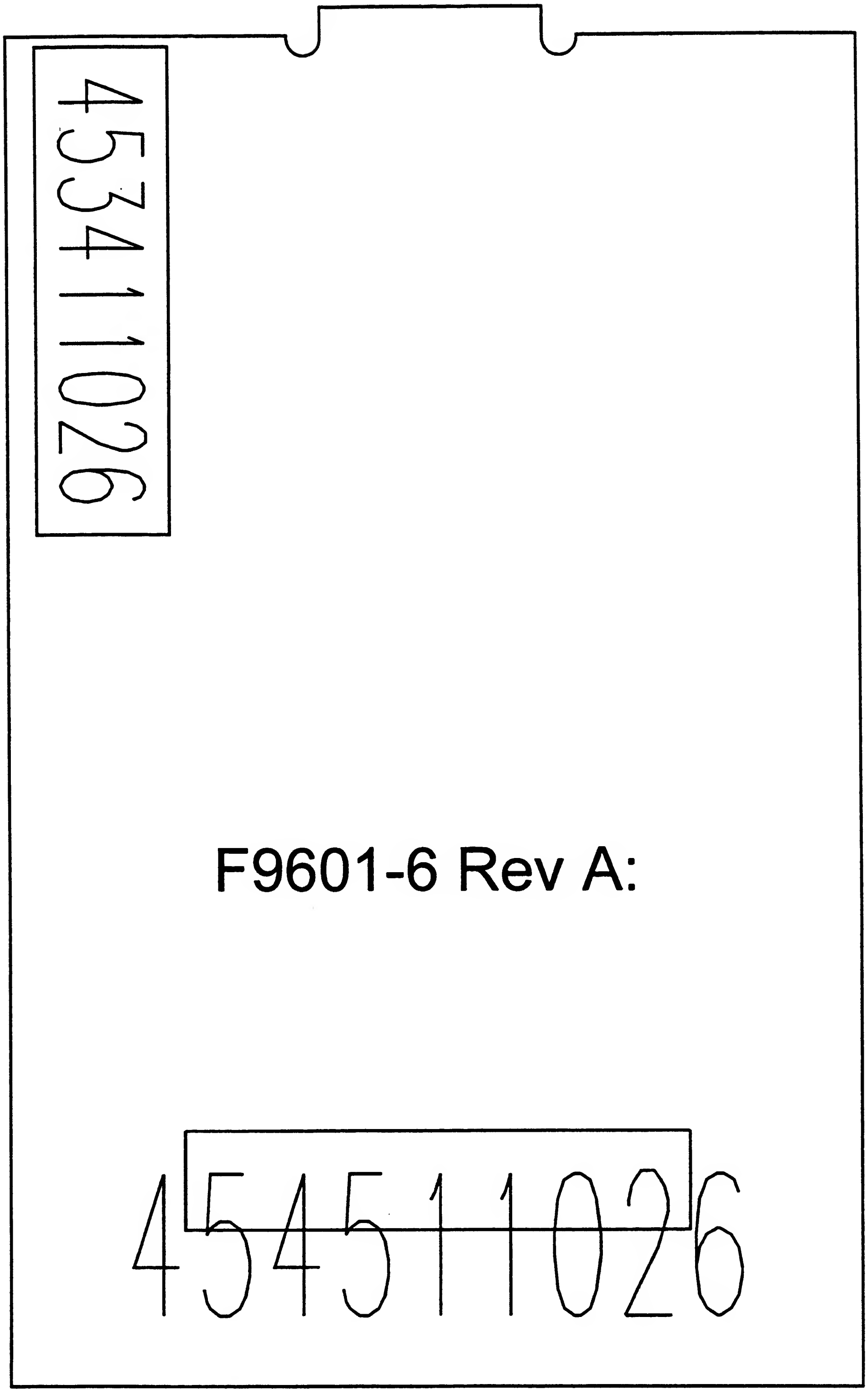
PART: F9604-5 **DESC : Front Panel**

Location	Part Number	Description
A1	MFP414	68HC05C4
A2	200331074	74HCT74
C1	103427104	.1uF
C2	103427104	.1uF
C3	103427104	.1uF
C4	147436033	33uF-16V
C5	103427104	.1uF
CR1	230020062	BAW62
CR2	230020062	BAW62
CR7	230020062	BAW62
CR8	230020062	BAW62
CR9	230020062	BAW62
CR10	230020062	BAW62
CR13	230020062	BAW62
CR14	230020062	BAW62
CR15	230020062	BAW62
CR16	230020062	BAW62
CR17	230020062	BAW62
CR18	230020062	BAW62
CR21	230020062	BAW62
CR22	230020062	BAW62
CR23	230020062	BAW62
CR24	230020062	BAW62
CR25	230020062	BAW62
CR26	230020062	BAW62
CR29	230020062	BAW62
CR30	230020062	BAW62
CR31	230020062	BAW62
CR32	230020062	BAW62
CR37	230020062	BAW62
CR38	230020062	BAW62
CR39	230020062	BAW62
CR40	230020062	BAW62
CR41	230020062	BAW62
CR42	230020062	BAW62
CR43	230020062	BAW62
CR44	230020062	BAW62
CR45	230020062	BAW62
CR46	230020062	BAW62
CR47	230020062	BAW62
CR48	230020062	BAW62
J1	454511020	2x10-RA-M-RE
J3	454200030	3x10-ST-M-PF
J10	425101024	ENCOD-2BIT
J76	425101024	ENCOD-2BIT
K76	425100024	ENCOD-2BIT
L10	425101024	ENCOD-2BIT
L32	425101024	ENCOD-2BIT
L76	425101024	ENCOD-2BIT
M10	425101024	ENCOD-2BIT
M32	425100024	ENCOD-2BIT
M76	425101024	ENCOD-2BIT
N10	425100024	ENCOD-2BIT
N32	425101024	ENCOD-2BIT
R1	161225471	470
RN1	190042103	10K-SC
RN2	190042103	10K-SC
RN3	190642103	10K-6SC

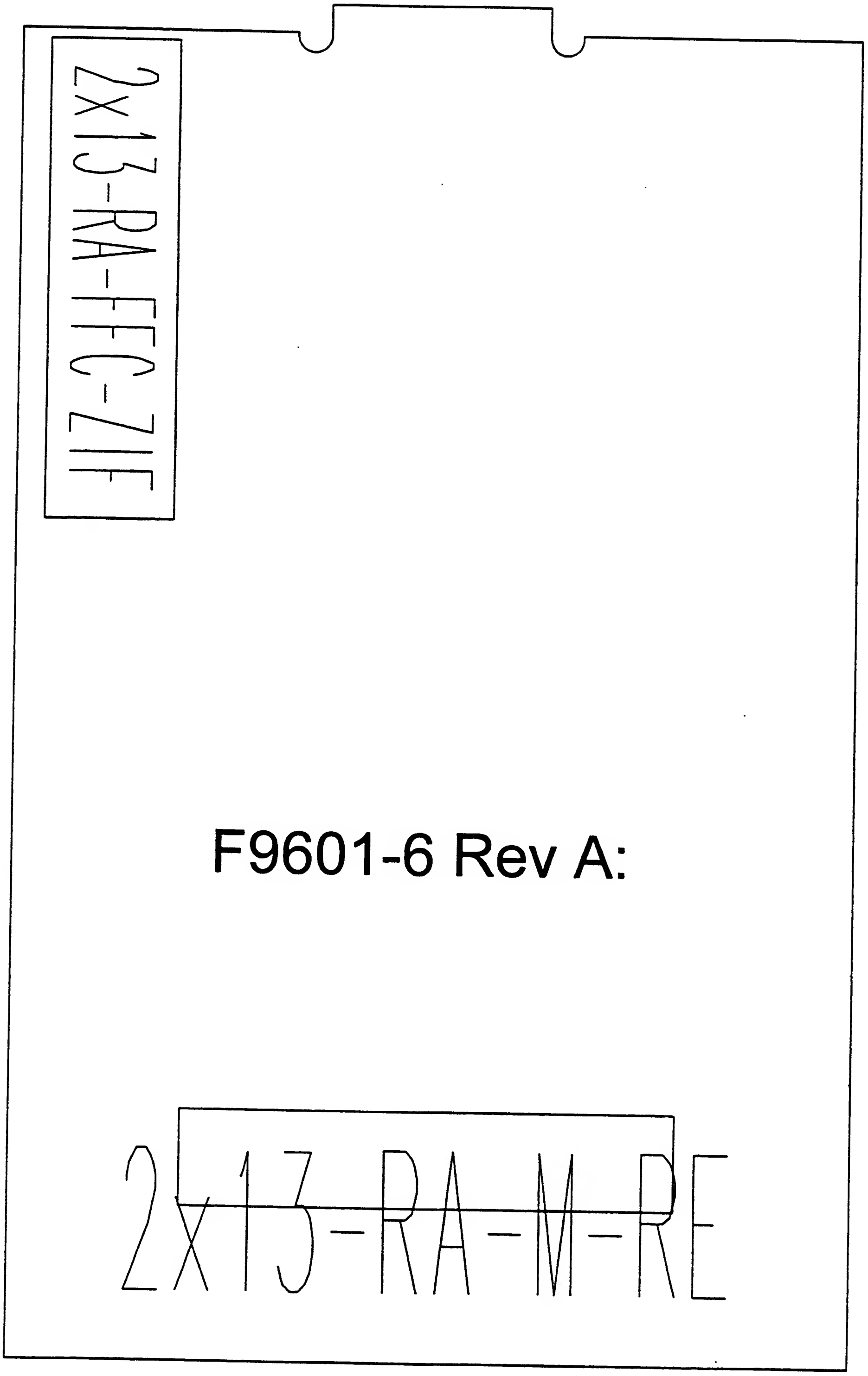


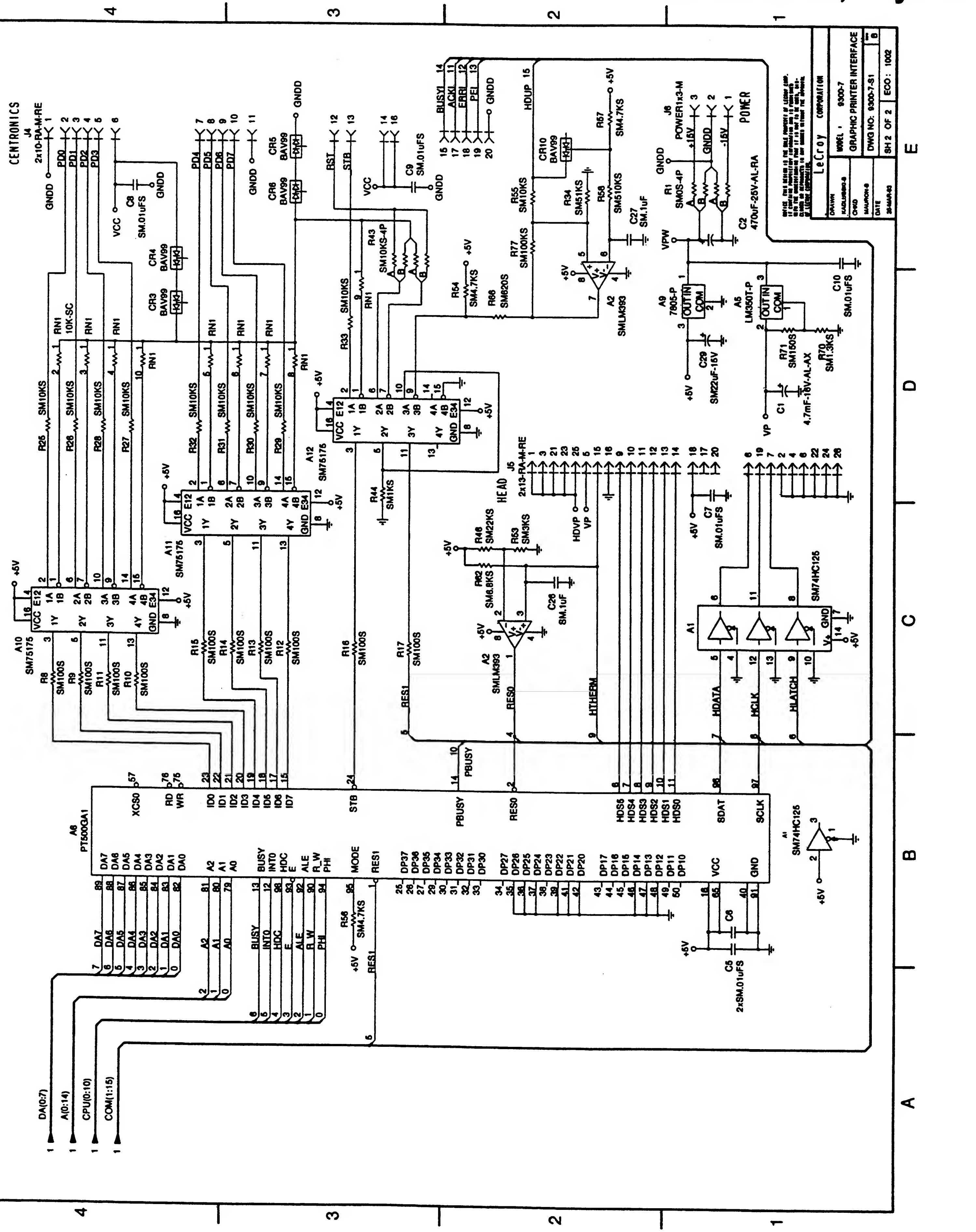
REMARQUE: THE PIN 1 OFF THE FLOPPY DISK DRIVE
IS CONNECTED TO THE PIN 1 OF THE ORIGINAL
FLAT CABLE. (THE REVERSE CONNECTION IS ONLY
A MECHANICAL GEOMETRY COMPATIBILITY).

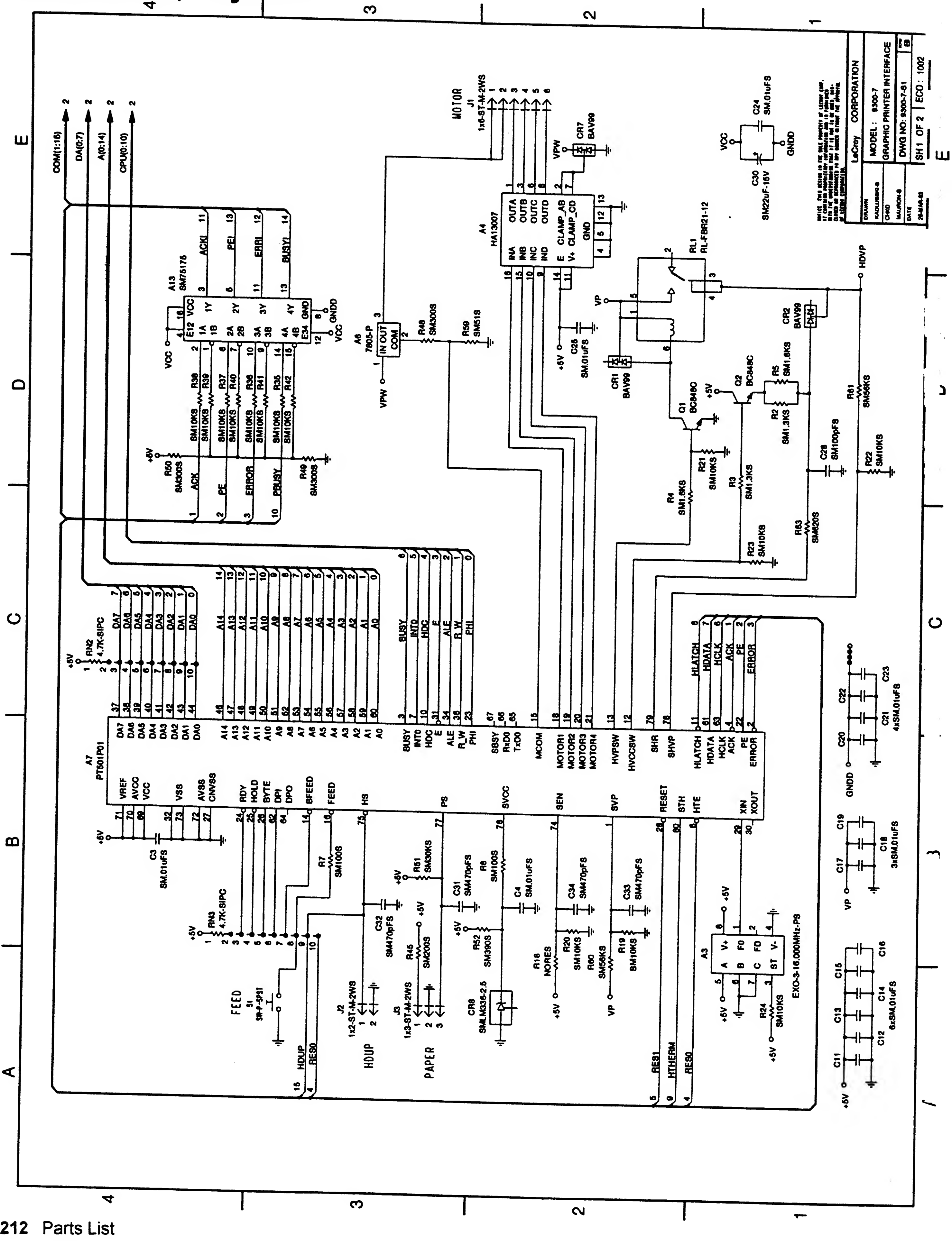

U2
F9601-6 Rev A:
J1

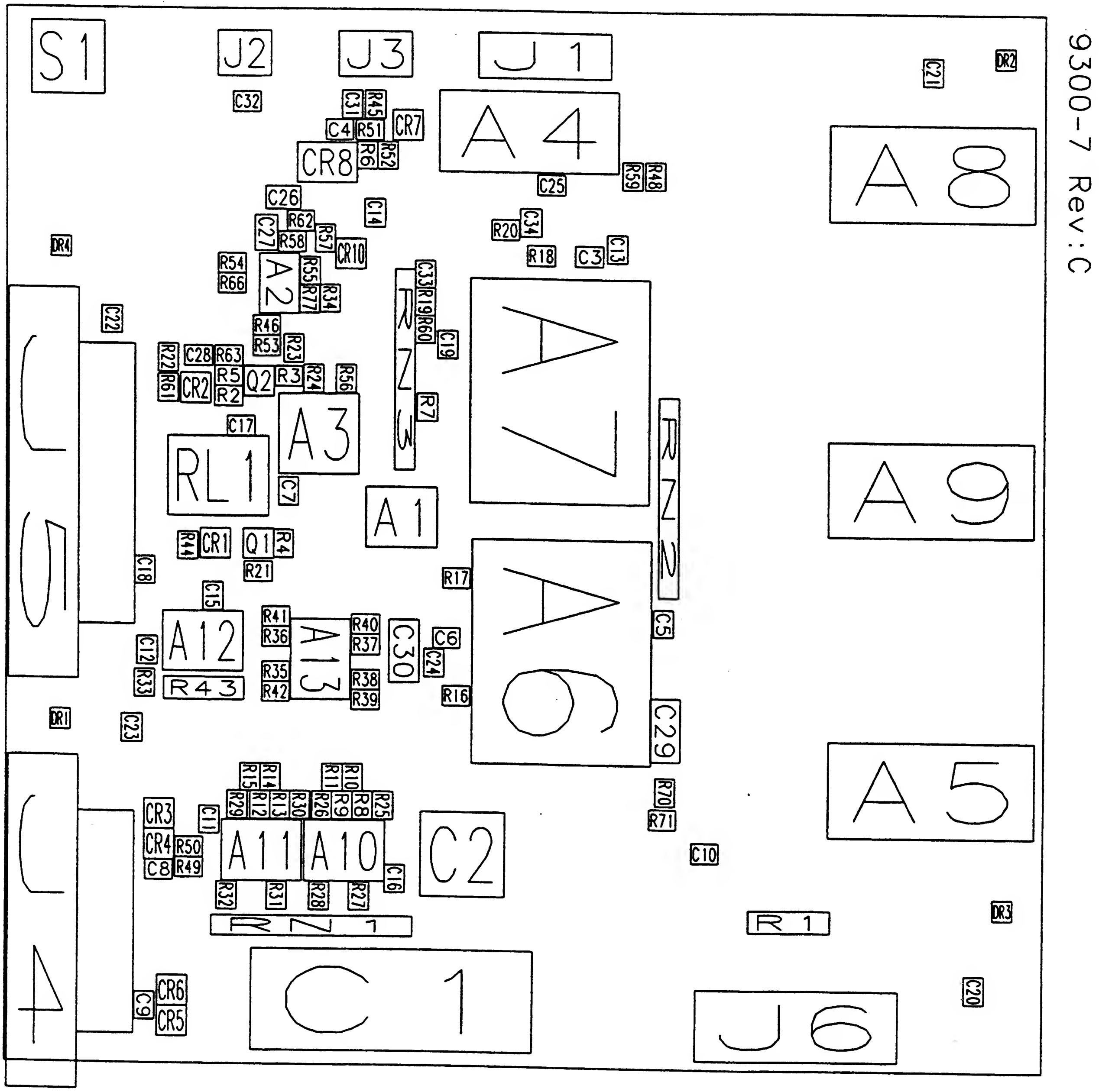


F9601-6 Rev A:


2x13-RA-FFC-ZIF
F9601-6 Rev A:
2x13-RA-M-RE


LeCroy CORPORATION
MODEL : 9300-7
GRAPHIC PRINTER INTERFACE
DWG NO: 9300-7-S1
SH 2 OF 2
ECO: 1002
DRAWN KABUSHIKI-8
CHKD MAURON-8
DATE 28-MAR-93
CENTRONICS
J4 2x10-RA-M-RE
HEAD
J5 2x13-RA-M-RE
J6 POWER1x3-M
POWER
A6 PT500GA1
A10 SM75175
A11 SM75175
A12 SM75175
A1 SM74HC125
A2 SMLM393
A9 7805-P
A5 LM350T-P
RN1 10K-SC
CR3 BAV99
CR4 BAV99
CR5 BAV99
CR6 BAV99
CR10 BAV99
C1 4.7mF-16V-AL-AX
C2 470uF-25V-AL-RA
C5 2xSM.01uFS
C29 SM22uF-15V
C26 SM.1uF
C27 SM.1uF
HDATA
HCLK
HLATCH
HTHERM
RES0
RES1
PBUSY
HDUP
HDVP
VP
VPW
GNDD
DA(0:7)
A(0:14)
CPU(0:10)
COM(1:15)
A
B
C
D
E
1
2
3
4


LeCroy CORPORATION
MODEL: 9300-7
GRAPHIC PRINTER INTERFACE
DWG NO: 9300-7-S1
SH 1 OF 2
ECO: 1002
B
COM(1:15)
DA(0:7)
A(0:14)
CPU(0:10)
A7
PT501P01
A13
SN75175
A4
HA13007
A6
7805-P
A3
EXO-3-16.000MHz-PS
MOTOR
J1
1x6-ST-M-2WS
J2
1x2-ST-M-2WS
HDUP
J3
1x3-ST-M-2WS
PAPER
FEED
S1
SW-P-SPST
RL1
RL-FBR21-12
Q1
BC846C
Q2
BC846C
CR1
BAV99
CR2
BAV99
CR7
BAV99
CR8
SMLM336-2.5
RN2
4.7K-SIPC
RN3
4.7K-SIPC
C30
SM22uF-16V
C24
SM.01uFS
VPW
VCC
GNDD
+5V
VP
HDVP
RES0
RES1
HTHERM


9300-7 Rev:C
S1
J2
J3
J1
J4
J5
J6
A1
A2
A3
A4
A5
A6
A7
A8
A9
A10
A11
A12
A13
C1
C2
RL1
RN1
RN2
RN3
R1
R43
Q1
Q2
CR1
CR2
CR3
CR4
CR5
CR6
CR7
CR8
CR10
DR1
DR2
DR3
DR4
C3
C4
C5
C6
C7
C8
C9
C10
C11
C12
C13
C14
C15
C16
C17
C18
C19
C20
C21
C22
C23
C24
C25
C26
C27
C28
C29
C30
C31
C32
C33
C34
R2
R3
R4
R5
R6
R7
R8
R9
R10
R11
R12
R13
R14
R15
R16
R17
R18
R19
R20
R21
R22
R23
R24
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R26
R27
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R30
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R32
R33
R34
R35
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R37
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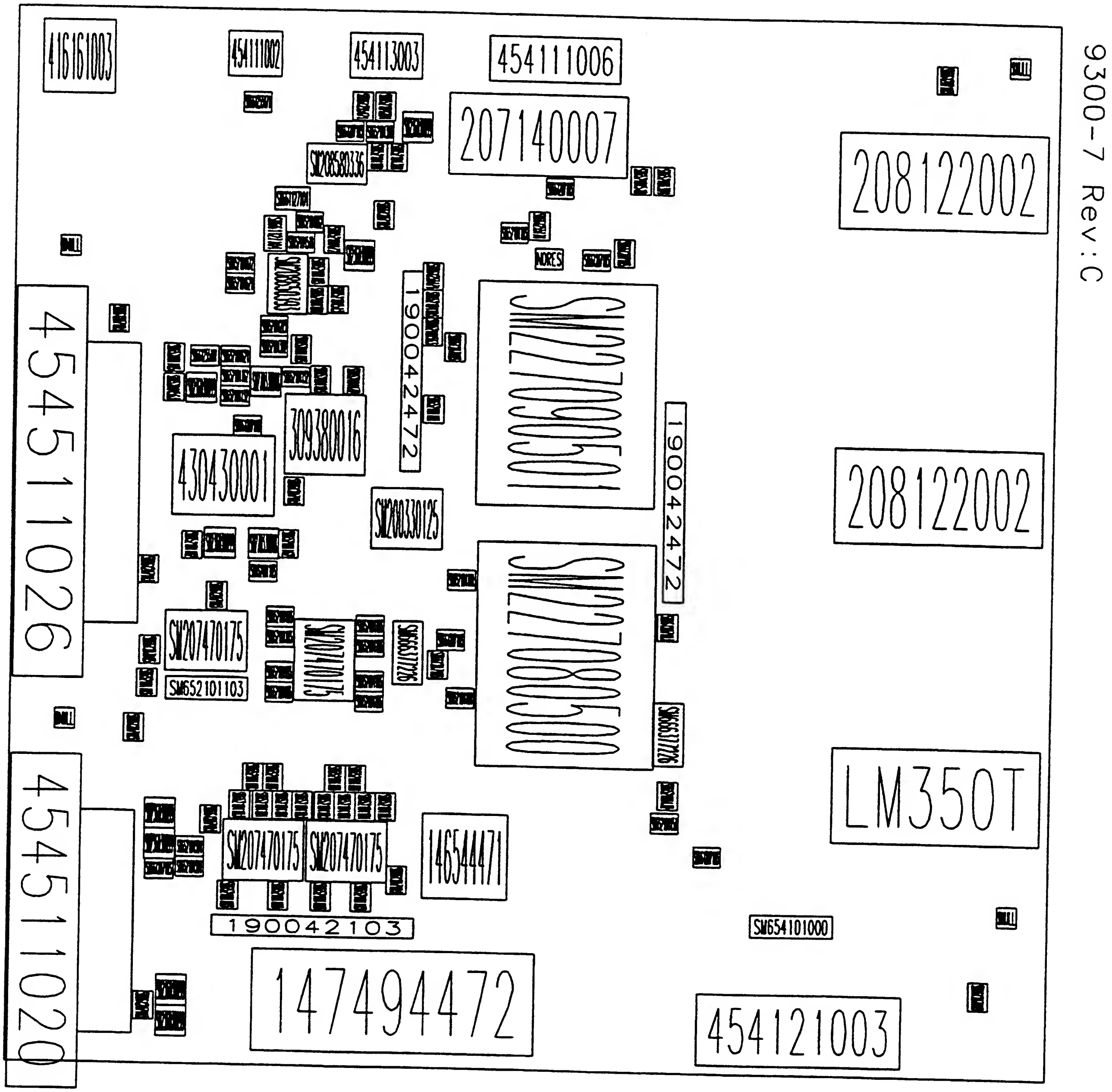
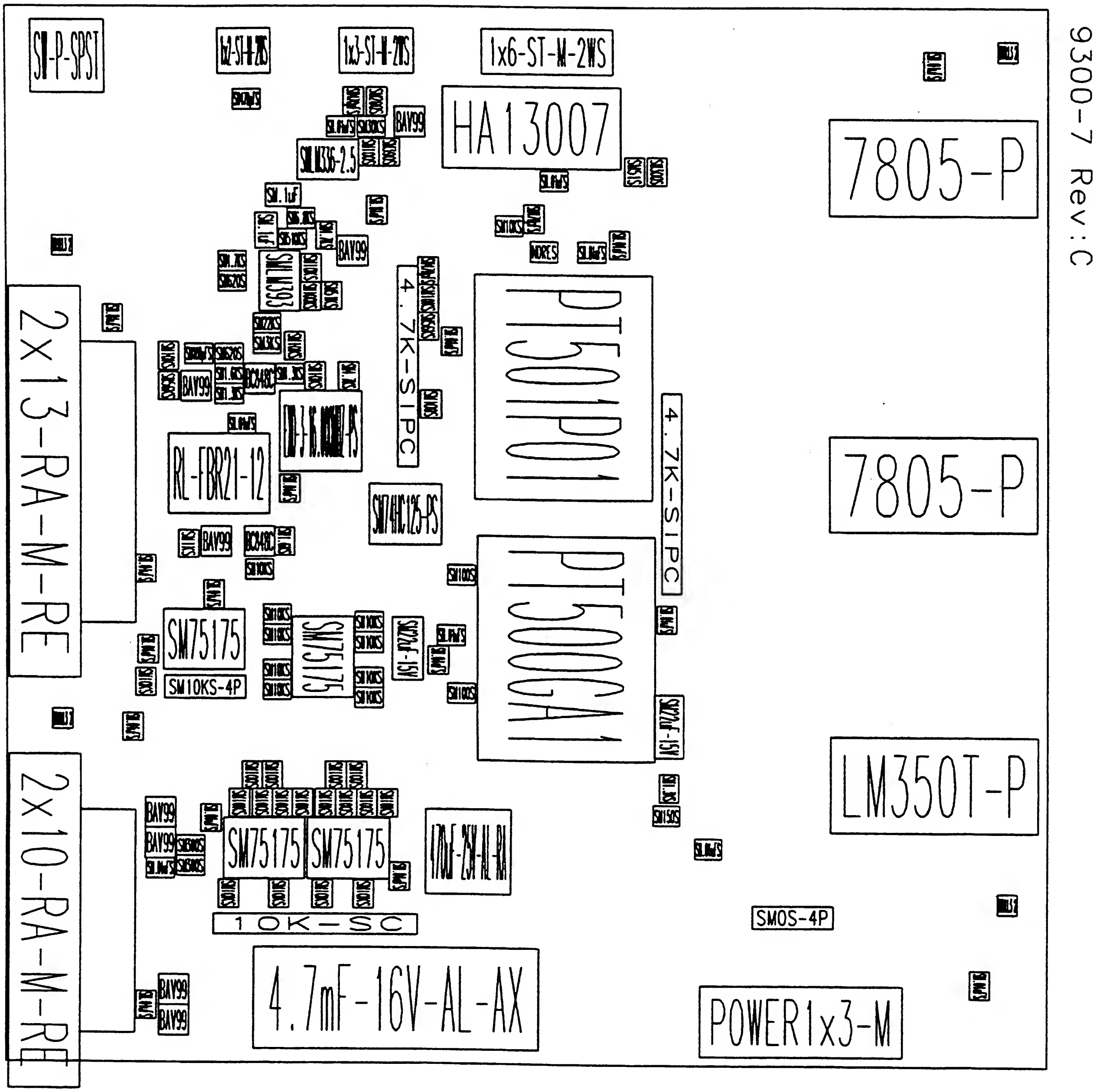
R40
R41
R42
R44
R45
R46
R48
R49
R50
R51
R52
R53
R54
R55
R56
R57
R58
R59
R60
R61
R62
R63
R66
R70
R71
R77


416161003
454111002
454113003
454111006
207140007
208122002
SM208580336
NORES
190042472
SM227090501
454511026
430430001
309380016
SM208330125
190042472
208122002
SM227080500
SM207470175
SM652101103
SM207470175
SM665372726
SM665372726
LM350T
454511020
SM207470175
SM207470175
146544471
190042103
SM654101000
147494472
454121003
9300-7 Rev:C


9300-7 Rev:C
SW-P-SPST
1x6-ST-M-2WS
HA13007
7805-P
7805-P
LM350T-P
BAV99
4.7K-SIPC
4.7K-SIPC
PT5011P01
PT5006A1
2x13-RA-M-RE
2x10-RA-M-RE
RL-FBR21-12
SM75175
SM75175
SM75175
SM75175
SM10KS-4P
10K-SC
4.7mF-16V-AL-AX
SMOS-4P
POWER1x3-M

PART: F9300-7 **DESC : Printer Controller**

Location	Part Number	Description
A1	SM200330125	SM74HC125-PS
A2	SM208650393	SMLM393
A3	309380016	16.000MHZ
A4	207140007	HA13007
A5	208590350	LM350T-P
A6	SM227080500	PT500GA1
A7	SM227090501	PT502P01
A8	208122002	7805-P
A9	208122002	7805-P
A10	SM207470175	SM75175
A11	SM207470175	SM75175
A12	SM207470175	SM75175
A13	SM207470175	SM75175
C1	147494472	4.7mF-16V
C2	146544471	470uF-25V
C3	SM661207103	SM.01uFS
C4	SM661207103	SM.01uFS
C5	SM661207103	SM.01uFS
C6	SM661207103	SM.01uFS
C7	SM661207103	SM.01uFS
C8	SM661207103	SM.01uFS
C9	SM661207103	SM.01uFS
C10	SM661207103	SM.01uFS
C11	SM661207103	SM.01uFS
C12	SM661207103	SM.01uFS
C13	SM661207103	SM.01uFS
C14	SM661207103	SM.01uFS
C15	SM661207103	SM.01uFS
C16	SM661207103	SM.01uFS
C17	SM661207103	SM.01uFS
C18	SM661207103	SM.01uFS
C19	SM661207103	SM.01uFS
C20	SM661207103	SM.01uFS
C21	SM661207103	SM.01uFS
C22	SM661207103	SM.01uFS
C23	SM661207103	SM.01uFS
C24	SM661207103	SM.01uFS
C25	SM661207103	SM.01uFS
C26	SM661127104	SM.1uF
C27	SM661127104	SM.1uF
C28	SM661255101	SM100pFS
C29	SM666377226	SM22uF-15V
C30	SM666377226	SM22uF-15V

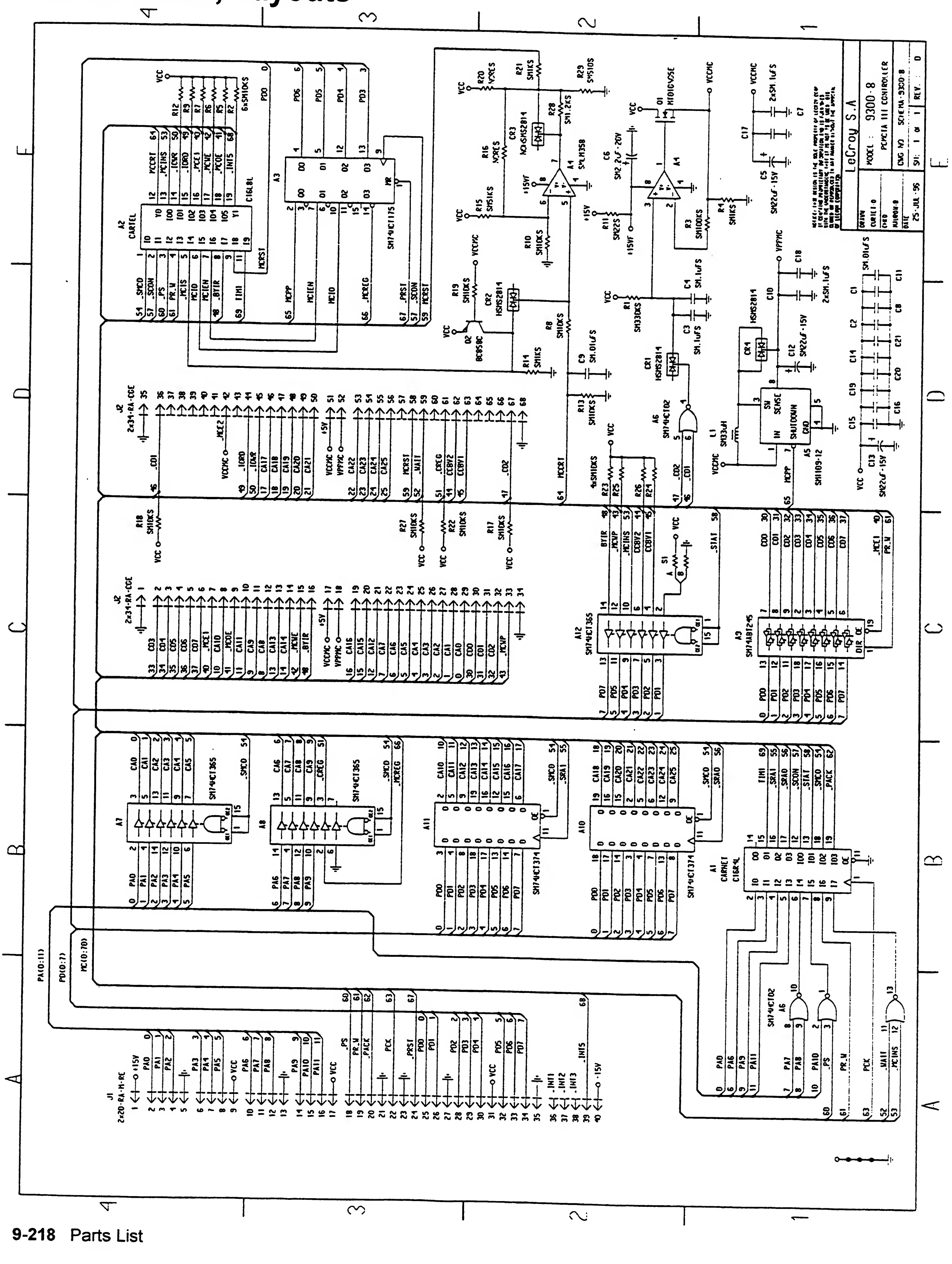
Location	Part Number	Description
C31	SM661255471	SM470pFS
C32	SM661255471	SM470pFS
C33	SM661255471	SM470pFS
C34	SM661255471	SM470pFS
CR1	SM236030099	BAV99
CR2	SM236030099	BAV99
CR3	SM236030099	BAV99
CR4	SM236030099	BAV99
CR5	SM236030099	BAV99
CR6	SM236030099	BAV99
CR7	SM236030099	BAV99
CR8	SM208580336	SMLM336-2.5
CR10	SM236030099	BAV99
J1	454111006	1x6-ST-M-2WS
J2	454111002	1x2-ST-M-2W
J3	454113003	1x3-ST-M-2W
J4	454511020	2x10-RA-M-RE
J5	454511026	2x13-RA-M-RE
J6	454121003	POWER1x3-M
J7	454115003	1x3-ST-M-FLPN
Q1	SM270330848	BC848C
Q2	SM270330848	BC848C
R1	SM654101000	SM0S-4P
R2	SM652101132	SM1.3KS
R3	SM652101132	SM1.3KS
R4	SM652101162	SM1.6KS
R5	SM652101162	SM1.6KS
R6	SM652101101	SM100S
R7	SM652101101	SM100S
R8	SM652101101	SM100S
R9	SM652101101	SM100S
R10	SM652101101	SM100S
R11	SM652101101	SM100S
R12	SM652101101	SM100S
R13	SM652101101	SM100S
R14	SM652101101	SM100S
R15	SM652101101	SM100S
R16	SM652101101	SM100S
R17	SM652101101	SM100S
R19	SM652101103	SM10KS
R20	SM652101103	SM10KS
R21	SM652101103	SM10KS

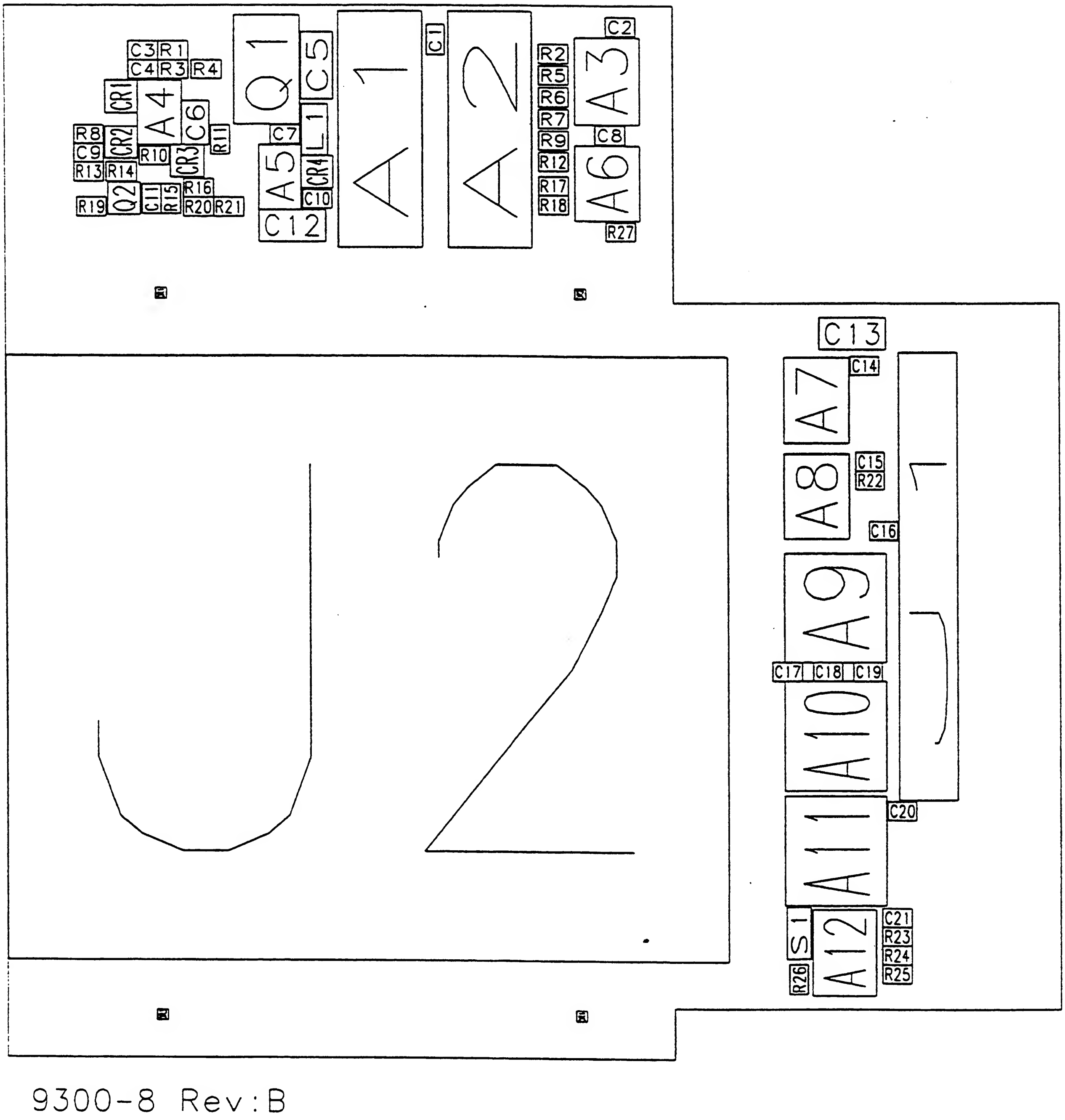
PART: F9300-7 **DESC : Printer Controller**

Location	Part Number	Description
R22	SM652101103	SM10KS
R23	SM652101103	SM10KS
R24	SM652101103	SM10KS
R25	SM652101103	SM10KS
R26	SM652101103	SM10KS
R27	SM652101103	SM10KS
R28	SM652101103	SM10KS
R29	SM652101103	SM10KS
R30	SM652101103	SM10KS
R31	SM652101103	SM10KS
R32	SM652101103	SM10KS
R33	SM652101103	SM10KS
R34	SM652101513	SM51KS
R35	SM652101103	SM10KS
R36	SM652101103	SM10KS
R37	SM652101103	SM10KS
R38	SM652101103	SM10KS
R39	SM652101103	SM10KS
R40	SM652101103	SM10KS
R41	SM652101103	SM10KS
R42	SM652101103	SM10KS
R43	SM652101103	SM10KS
R44	SM652101102	SM1KS
R45	SM652101201	SM200S
R46	SM652101223	SM22KS
R48	SM652101301	SM300S
R49	SM652101301	SM300S
R50	SM652101301	SM300S
R51	SM652101303	SM30KS
R52	SM652101391	SM390S
R53	SM652101302	SM3KS
R54	SM652101472	SM4.7KS
R55	SM652101103	SM10KS
R56	SM652101472	SM4.7KS
R57	SM652101472	SM4.7KS
R58	SM652101514	SM510KS
R59	SM652101510	SM51S
R60	SM652101563	SM56KS
R61	SM652101563	SM56KS
R62	SM652101682	SM6.8KS
R63	SM652101621	SM620S
R66	SM652101621	SM620S
R67	SM652101472	SM4.7KS
R70	SM652101132	SM1.3KS
R71	SM652101151	SM150S
R77	SM652101104	SM100KS
RL1	430430001	RL-FBR21-12
RN1	190042103	10K-SC
RN2	190042472	4.7K-SIPC
RN3	190042472	4.7K-SIPC
S1	416161003	SW-P-SPST

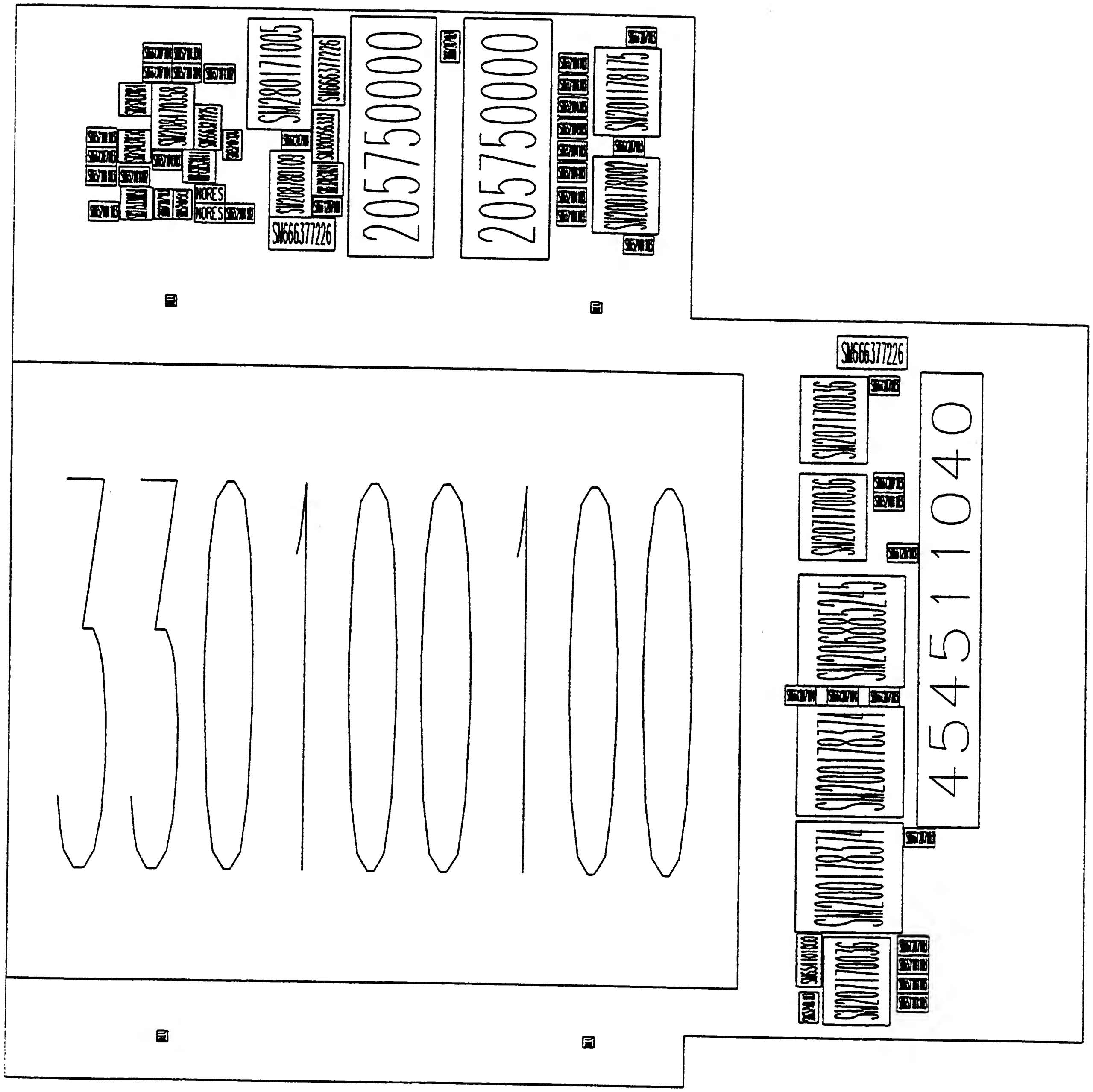
PART: F9601-6 **DESC : Floppy Disk Interface**

Location	Part Number	Description
J1	454511026	2x13-RA-M-RE
J2	453411026	2x13-RA-FFC-ZIF

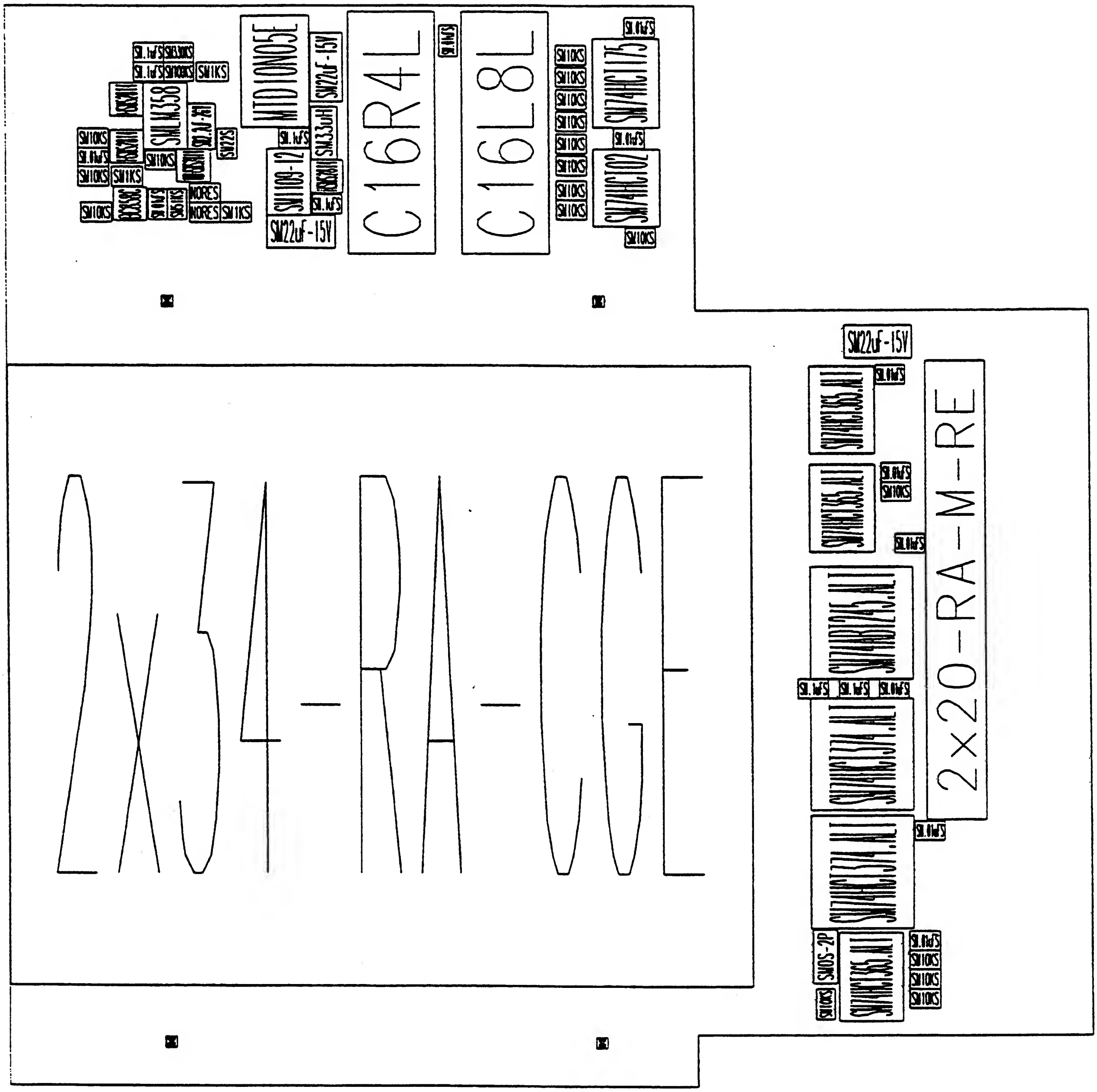

LeCroy S.A
MODEL : 9300-8
PCMCIA III CONTROLLER
DWG NO SCHEMA-93C0-8
SH: 1 OF 1
REV. : D
DRWN CURILLO
CHKD MAIRON-B
DATE 25-JUL-95
A1 CARNET C16R4L
A2 CARTEL C16L8L
A3 SM74HC175
A4 SMLM358
A5 SM1109-12
A6 SM74HC02
A7 SM74HC1365
A8 SM74HC1365
A9 SM74ABT245
A10 SM74HCT374
A11 SM74HCT374
A12 SM74HCT365
J1 2x20-RA-M-RE
J2 2x34-RA-CCE
Q1 MTD10N05E
Q2 BC858C
CR1 HSMS2814
CR2 HSMS2814
CR3 HSMS2814
CR4 HSMS2814
L1 SM33uH
PA(0:11)
PD(0:7)
MC(0:70)
VCC
VCCMC
VPPMC
+15V
-15V


C3
R1
C4
R3
R4
CR1
A4
C6
R8
CR2
C9
R10
R11
R13
R14
CR3
Q2
C11
R15
R16
R19
R20
R21
Q1
C5
C7
L1
A5
CR4
C10
C12
A1
C1
A2
R2
R5
R6
R7
R9
R12
R17
R18
C2
A3
C8
A6
R27
J2
C13
C14
A7
C15
R22
A8
C16
A9
C17
C18
C19
A10
J1
A11
C20
S1
A12
R26
C21
R23
R24
R25
9300-8 Rev:B

Schematics, Layouts



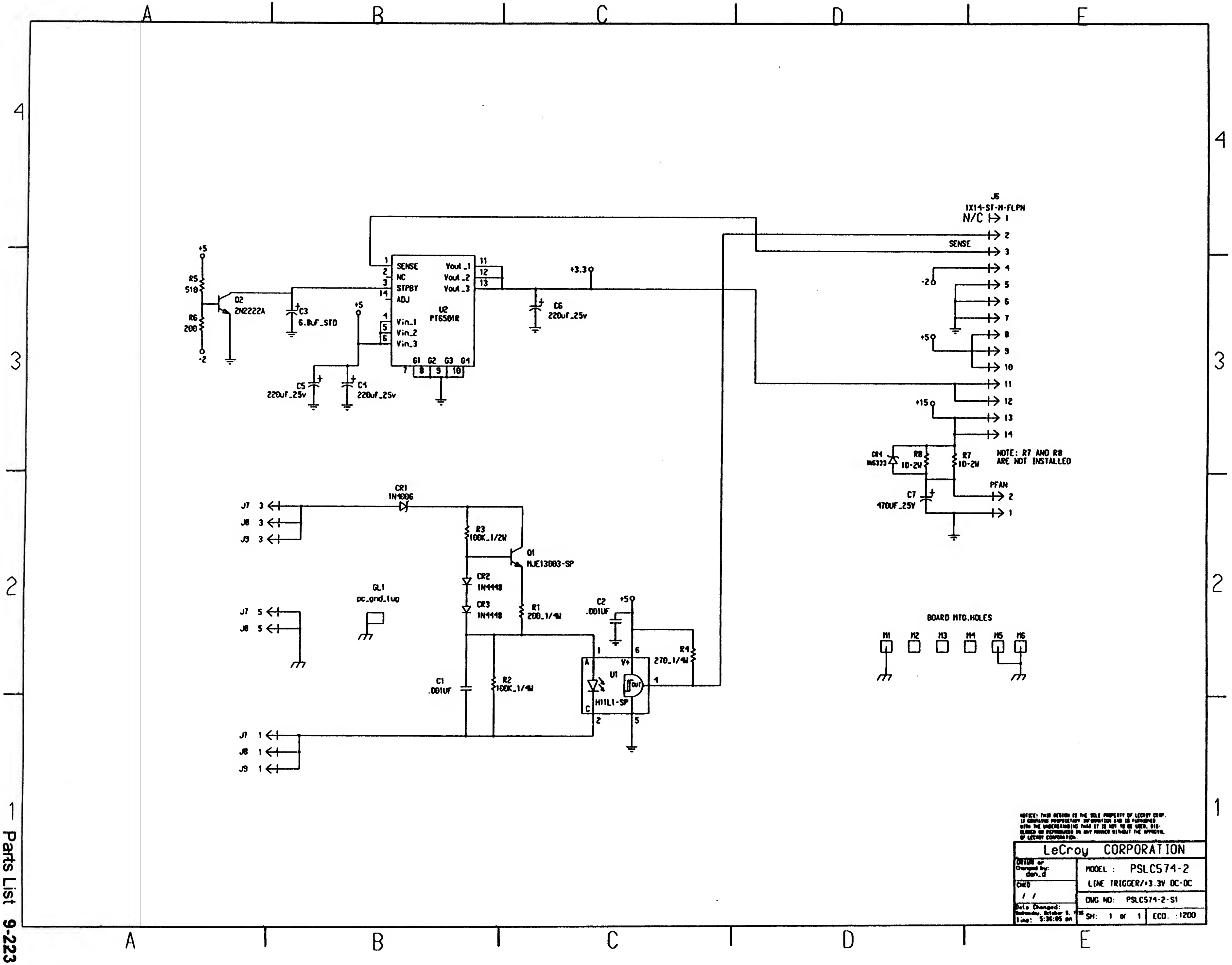
9300-8 Rev:B


MTD10N05E
SM22uF-15V
C16R4L
C16L8L
SM1109-12
SM22uF-15V
2x34-RA-CGE
2x20-RA-M-RE
SM22uF-15V

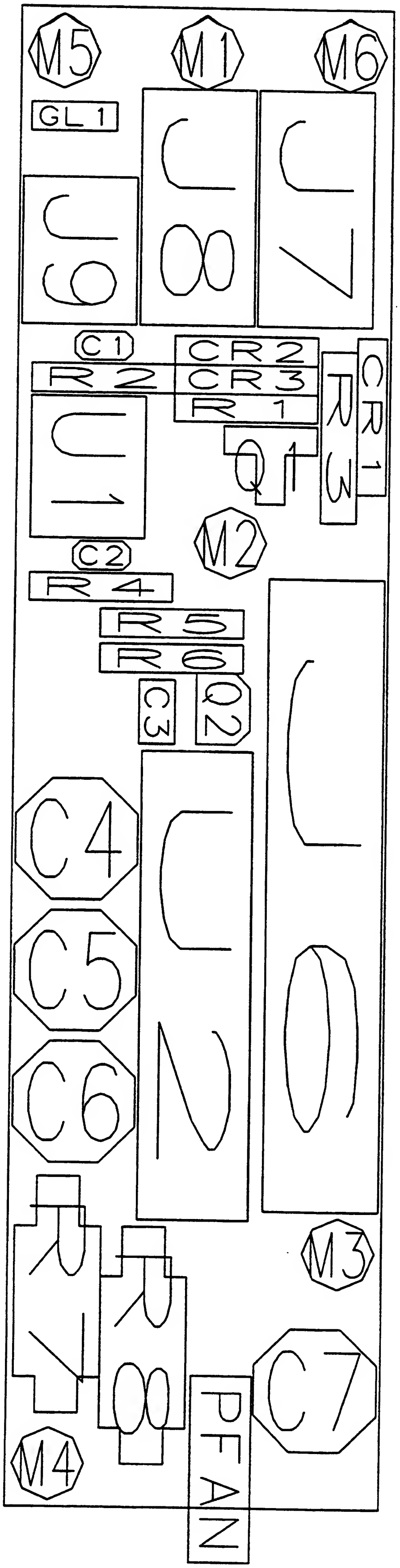
9300-8 Rev:B

PART: F9300-8 **DESC : Hard Disk Interface**

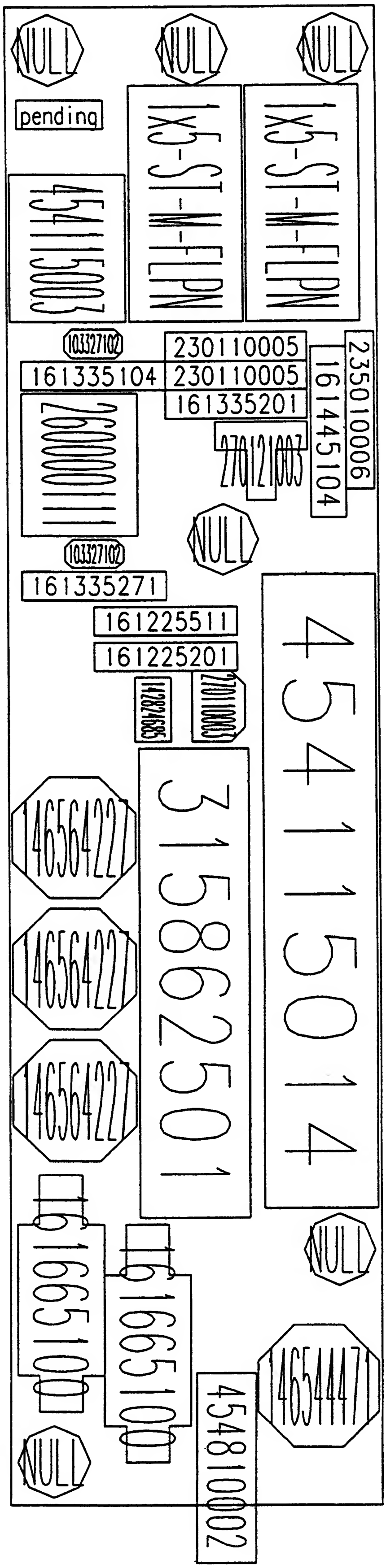
Location	Part Number	Description
A1	205750000	C16R4L
A2	205750000	C16L8L
A3	SM201178175	SM74HCT175
A4	SM208470358	SMLM358
A5	SM208780109	SM1109-12
A6	SM200178002	SM74HCT02
A7	SM207170036	SM74HCT365
A8	SM207170036	SM74HCT365
A9	SM206885245	SM74ABT245
A10	SM200178374	SM74HCT374
A11	SM200178374	SM74HCT374
A12	SM207170036	SM74HCT365
C1	SM661207103	SM.01uFS
C2	SM661207103	SM.01uFS
C3	SM661207104	SM.1uFS
C4	SM661207104	SM.1uFS
C5	SM666377226	SM22uF-15V
C6	SM666327225	SM2.2uF-20V
C7	SM661207104	SM.1uFS
C8	SM661207103	SM.01uFS
C9	SM661207103	SM.01uFS
C10	SM661207104	SM.1uFS
C11	SM661207103	SM.01uFS
C12	SM666377226	SM22uF-15V
C13	SM666377226	SM22uF-15V
C14	SM661207103	SM.01uFS
C15	SM661207103	SM.01uFS
C16	SM661207103	SM.01uFS
C17	SM661207104	SM.1uFS
C18	SM661207104	SM.1uFS
C19	SM661207103	SM.01uFS
C20	SM661207103	SM.01uFS
C21	SM661207103	SM.01uFS
CR1	SM232032814	HSMS2814
CR2	SM232032814	HSMS2814
CR4	SM232032814	HSMS2814
J1	454511040	2x20-RA-M-RE
J2	330100100	2x34-RA-CGE
L1	SM300056332	SM33uH
Q1	SM280171005	MTD10N05E
Q2	SM275330858	BC858C
R1	SM652101334	SM330KS
R2	SM652101103	SM10KS
R3	SM652101104	SM100KS
R4	SM652101102	SM1KS
R5	SM652101103	SM10KS
R6	SM652101103	SM10KS
R7	SM652101103	SM10KS
R8	SM652101103	SM10KS
R9	SM652101103	SM10KS
R10	SM652101103	SM10KS
R11	SM652101220	SM22S
R12	SM652101103	SM10KS
R13	SM652101103	SM10KS
R14	SM652101102	SM1KS
R15	SM652101513	SM51KS
R17	SM652101103	SM10KS
R18	SM652101103	SM10KS
R19	SM652101103	SM10KS
R21	SM652101102	SM1KS
R22	SM652101103	SM10KS
R23	SM652101103	SM10KS
R24	SM652101103	SM10KS
R25	SM652101103	SM10KS
R26	SM652101103	SM10KS
R27	SM652101103	SM10KS
R28	SM652101122	SM1.2KS
R29	SM652101511	SM510S
S1	SM654101000	SM0S-2P


J6
1X14-ST-M-FLPN
N/C
SENSE
-2
+5
+15
NOTE: R7 AND R8 ARE NOT INSTALLED
R7 10-2W
R8 10-2W
CR4 1N5333
C7 470UF_25V
PFAN
+3.3
C6 220uf_25v
U2 PT6501R
SENSE
NC
STPBY
ADJ
Vin_1
Vin_2
Vin_3
Vout_1
Vout_2
Vout_3
G1 G2 G3 G4
C3 6.8uF_STD
C4 220uf_25v
C5 220uf_25v
Q2 2N2222A
R5 510
R6 200
CR1 1N4006
R3 100K_1/2W
Q1 MJE13003-SP
CR2 1N4148
CR3 1N4148
R1 200_1/4W
C1 .001UF
R2 100K_1/4W
C2 .001UF
U1 H11L1-SP
V+
OUT
R4 270_1/4W
J7 J8 J9
GL1 pc_gnd_lug
BOARD MTG.HOLES
M1 M2 M3 M4 M5 M6
NOTICE: THIS DESIGN IS THE SOLE PROPERTY OF LECROY CORP. IT CONTAINS PROPRIETARY INFORMATION AND IS FURNISHED WITH THE UNDERSTANDING THAT IT IS NOT TO BE USED, DISCLOSED OR REPRODUCED IN ANY MANNER WITHOUT THE APPROVAL OF LECROY CORPORATION.
LeCroy CORPORATION
DRAWN or Changed by: dan.d
CHKD / /
Date Changed:
Time: 5:36:05 pm
MODEL : PSLC574-2
LINE TRIGGER/+3.3V DC-DC
DWG NO: PSLC574-2-S1
SH: 1 of 1
ECO. :1200

PSLC574-2 Rev A:

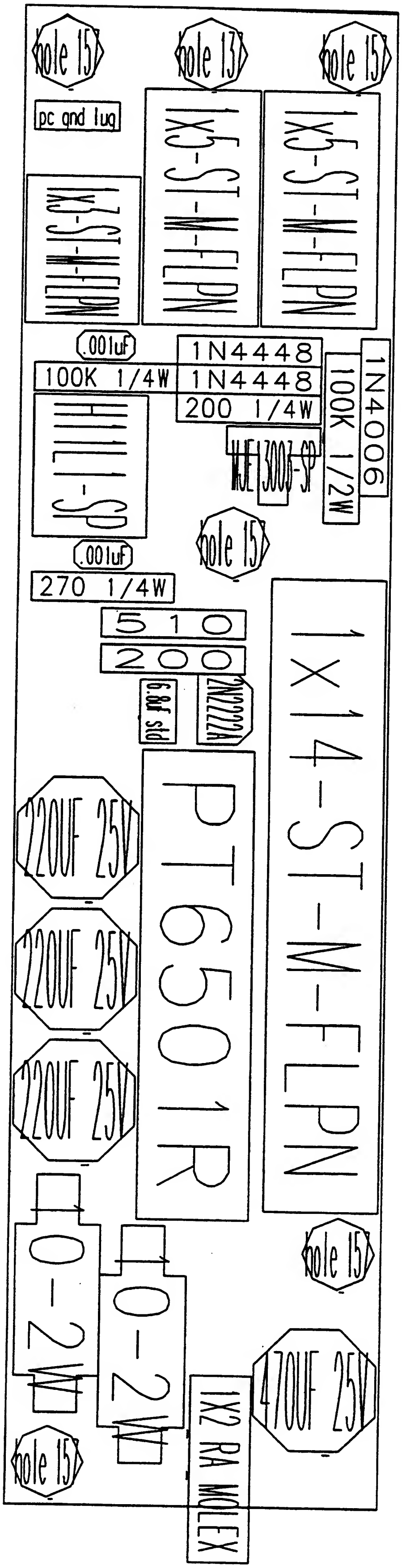


PSLC574-2 Rev A:



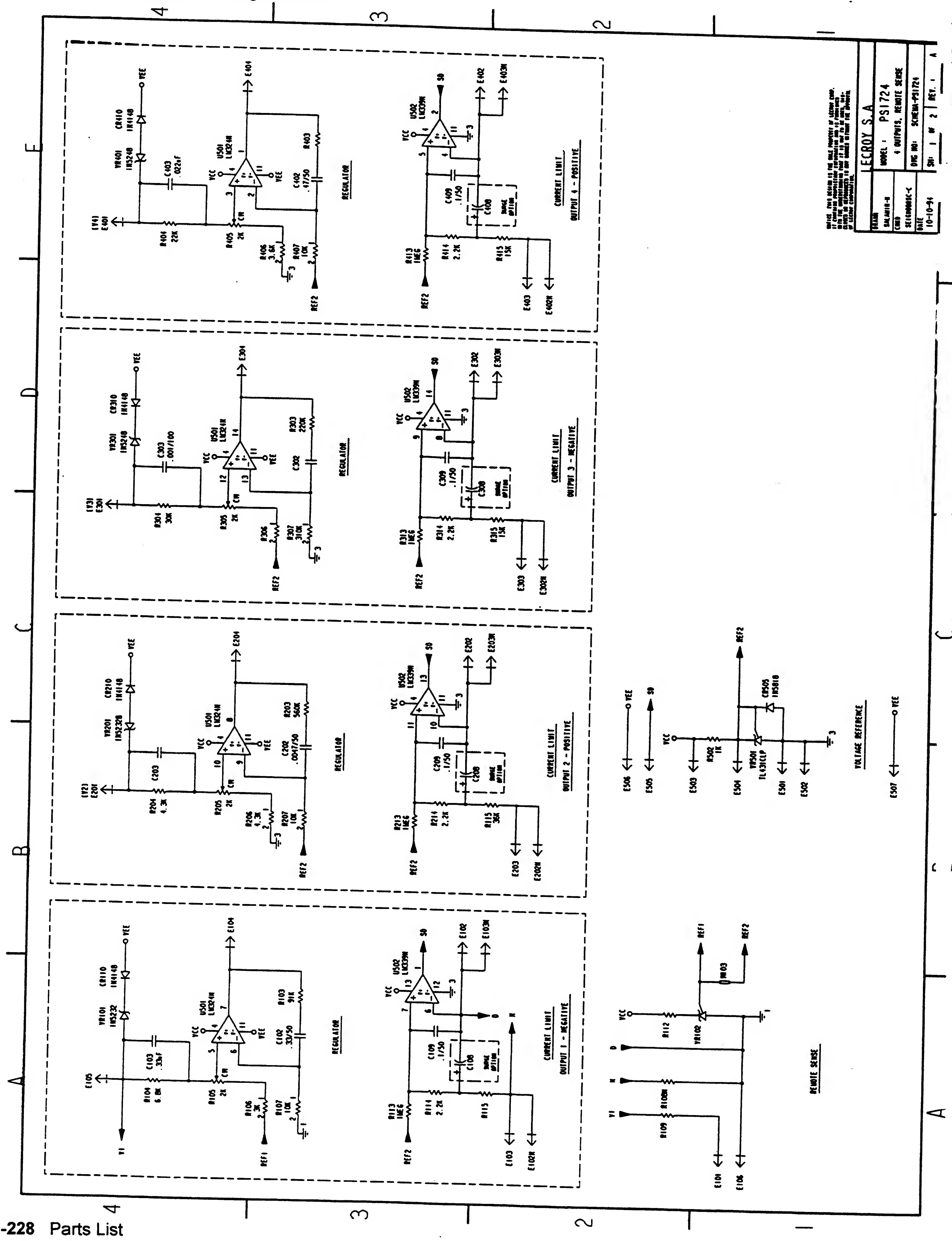
Schematics, Layouts

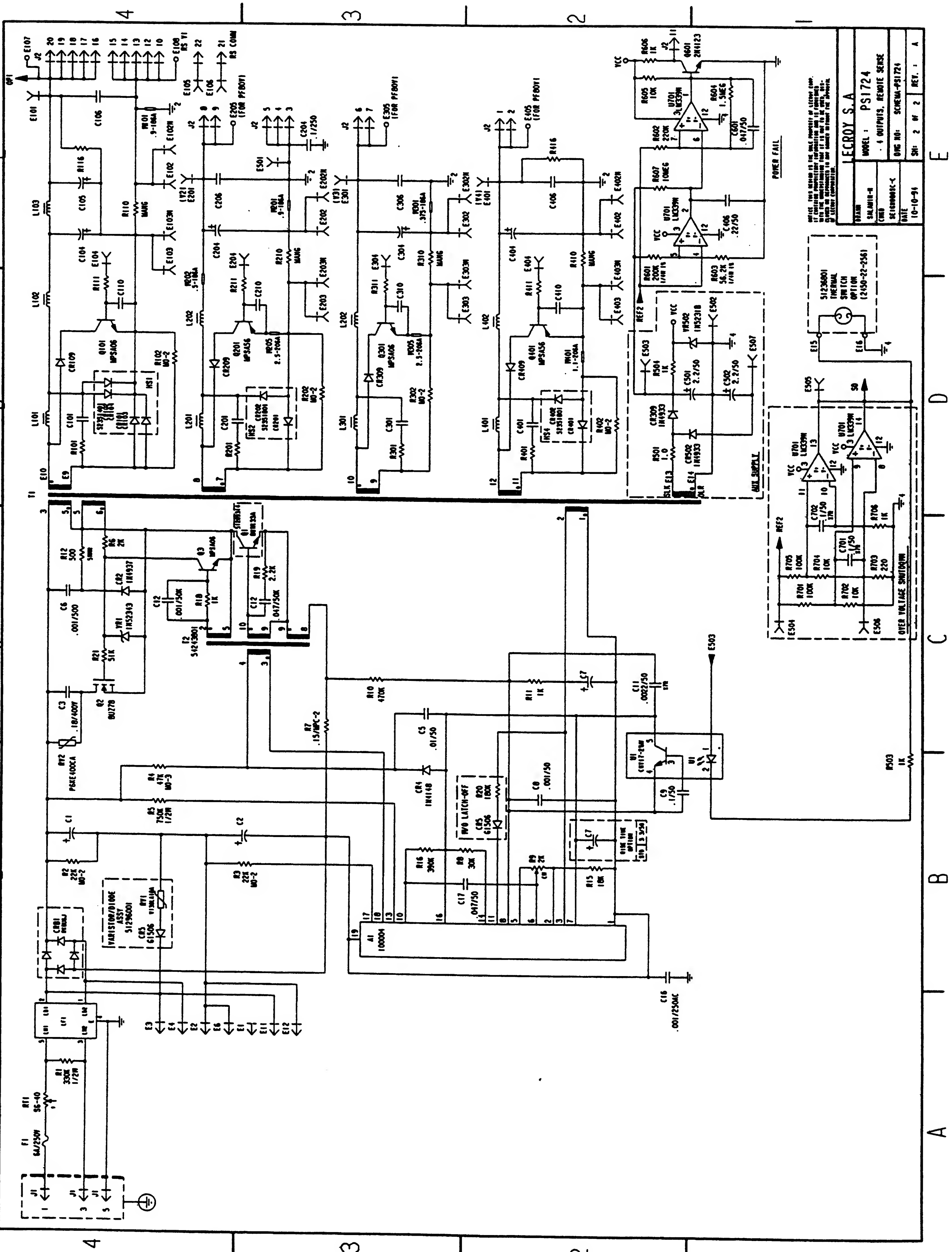
PSLC574-2 Rev A:



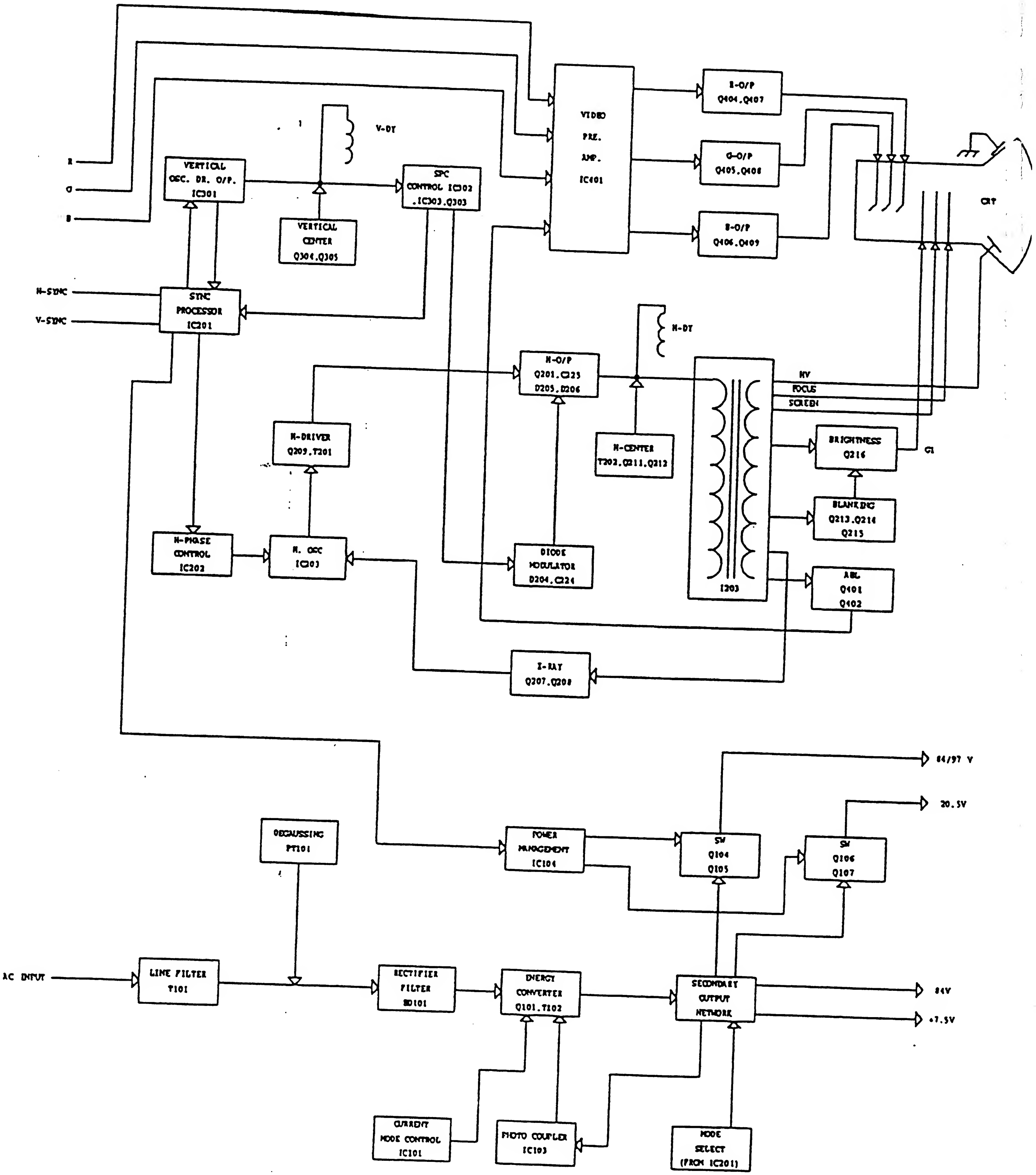
PART: PSLC574-2 **DESC : Hard Disk Interface**

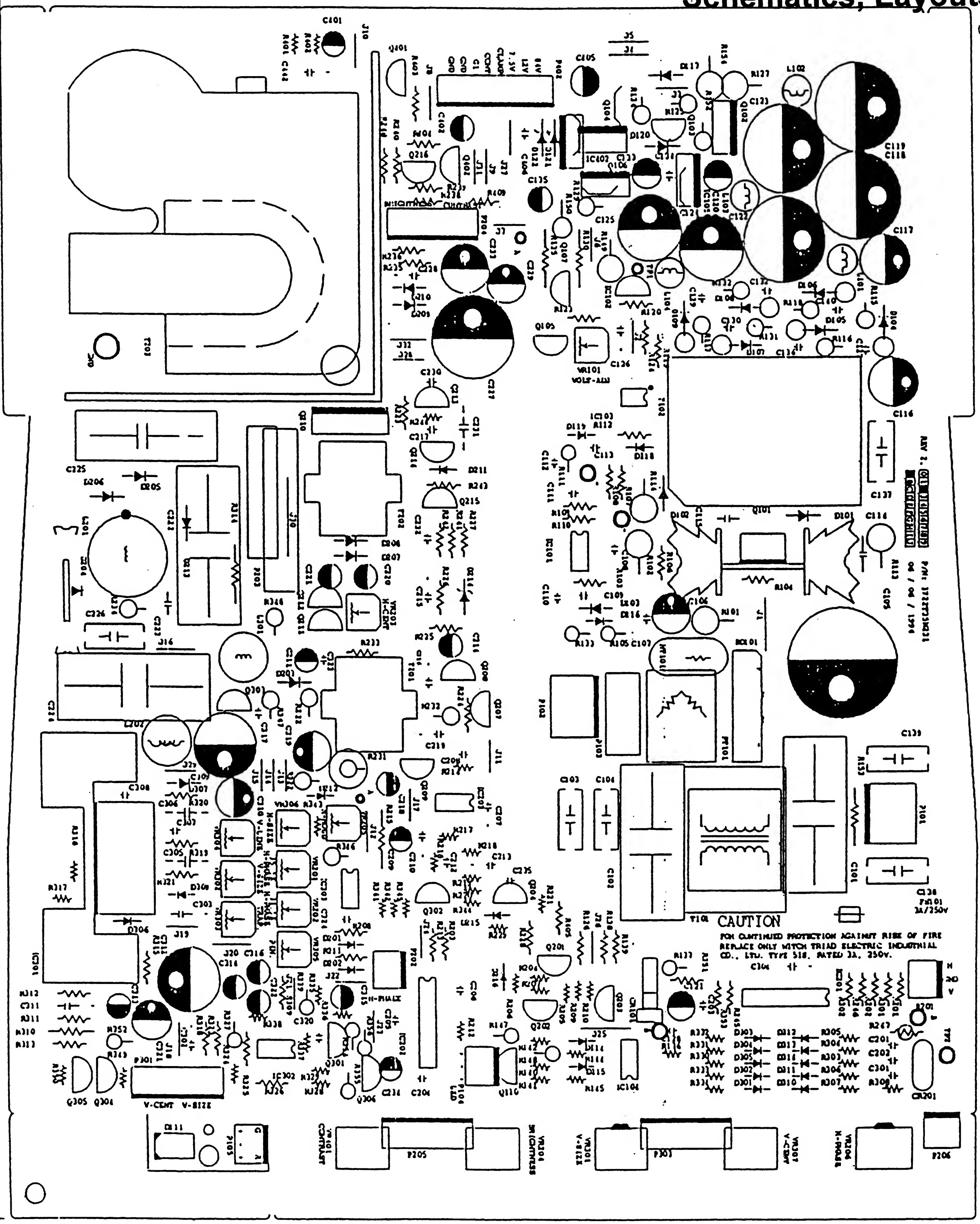
Location	Part Number	Description
C1	106435102	.001UF
C2	106435102	.001UF
C3	142824685	6.8 UF
C4	146564227	220 UF
C5	146564227	220 UF
C6	146564227	220 UF
C7	146544471	470 UF
CR1	235010006	1N4006
CR2	230110005	1N4448
CR3	230110005	1N4448
CR4	240035333	1N5333A
GL1	510140002	AMP 63525-1
J6	454115014	41671 26-48-1145
J7	454115103	41671 26-48-1055
J8	454115103	41671 26-48-1055
J9	454115003	41671 26-48-1035
PFAN	454810002	7395 22-05-7028
Q1	270121003	MJE13003
Q2	270110003	PN2222A
R1	161335201	200 OHM
R2	161335104	100 K
R3	161445104	100 K
R4	161335271	270 OHMS
R5	161225511	510 OHMS
R6	161225201	200 OHMS
U1	260000111	H11L1
	315826501	PT6501N
	455021008	02-06-1103
	455123002	02-06-1103
	590001022	7/30 BLK 22
	590221022	7/30 RED 22

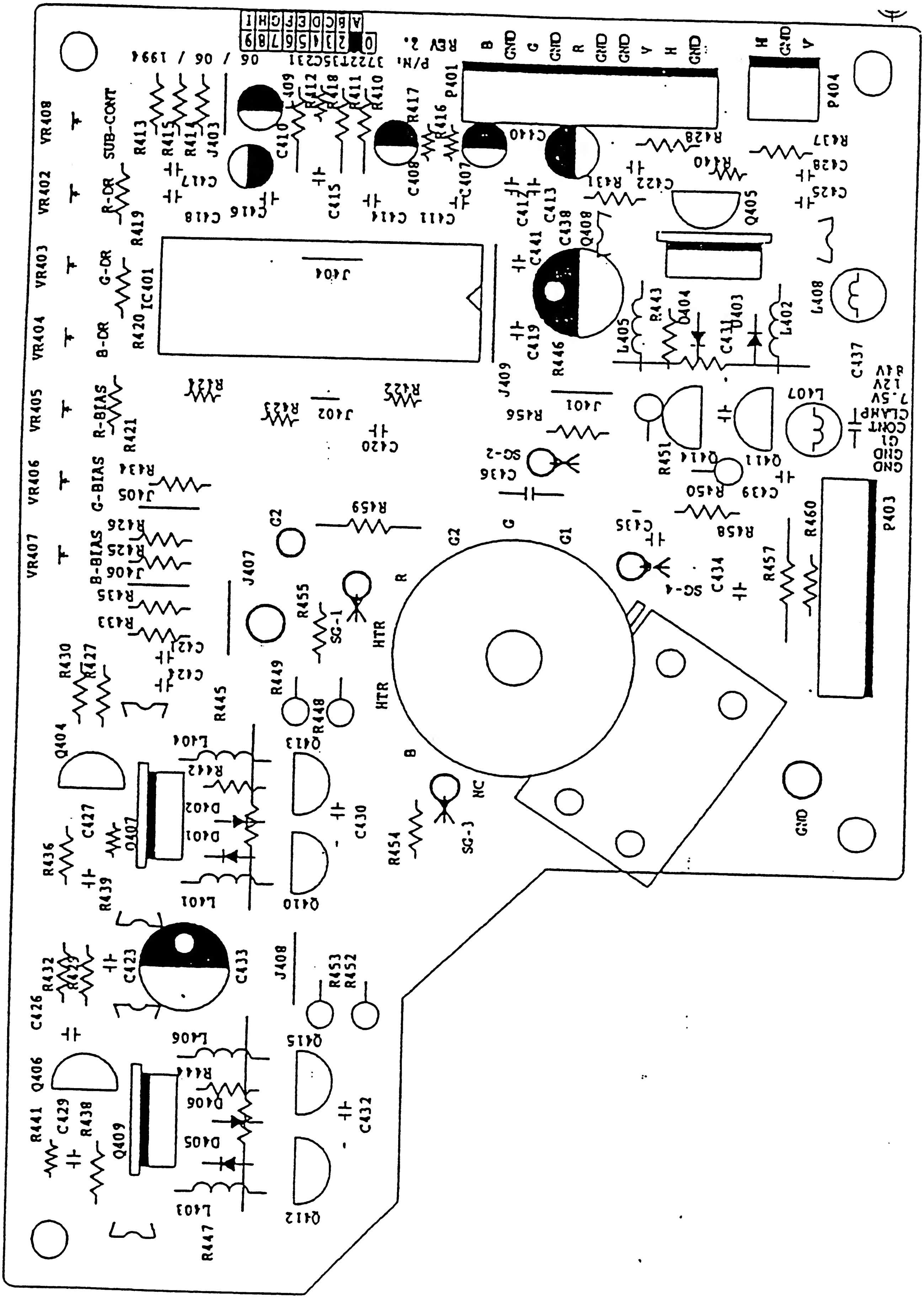

LECROY S.A
MODEL : PS1724
4 OUTPUTS, REMOTE SENSE
DWG NO: SCHEMA-PS1724
SH: 1 OF 2
REV. 1
A
DRAWN SALAMIN-M
CHKD SEISMOBSC-C
DATE 10-10-94
REGULATOR
CURRENT LIMIT
OUTPUT 1 - NEGATIVE
OUTPUT 2 - POSITIVE
OUTPUT 3 - NEGATIVE
OUTPUT 4 - POSITIVE
VOLTAGE REFERENCE
REMOTE SENSE
U501 LM324N
U502 LM339N
VR101 1N5232
VR201 1N5232B
VR301 1N5248
VR401 1N5248
CR110 1N4148
CR210 1N4148
CR310 1N4148
CR410 1N4148
VR501 TL431CLP
CR505 1N5818
R502 1K
VR102
W103
VCC
VEE
REF1
REF2
SO
E101
E105
E106
E104
E204
E304
E404
E507
R113 1MEG
R114 2.2K
R213 1MEG
R214 2.2K
R215 36K
R313 1MEG
R314 2.2K
R315 15K
R413 1MEG
R414 2.2K
R415 15K
R104 6.8K
R105 2K
R106 3K
R107 10K
R103 91K
C103 .33uF
C102 .33/50
R204 4.3K
R205 2K
R206 4.3K
R207 10K
R203 560K
C202 .0047/50
R301 30K
R305 2K
R307 310K
R303 220K
C303 .001/100
R401 22K
R405 2K
R406 3.6K
R407 10K
R403
C403 .022uF
C402 .47/50
C109 .1/50
C209 .1/50
C309 .1/50
C409 .1/50
C108
C208
C308
C408
1
2
3
4


LECROY S.A
MODEL : PS1724
4 OUTPUTS, REMOTE SENSE
DWG NO: SCHEMA-PS1724
SH: 2 OF 2
REV. : A
DRAWN SALAMIN-R
CHKD SEIGNOBOSC-Y
DATE 10-10-91
POWER FAIL
AUX SUPPLY
OVER VOLTAGE SHUTDOWN
5123600I THERMAL SWITCH OPTION (2450-22-256I)
VARISTOR/DIODE ASSY 5129600I
W/O LATCH-OFF
A1 10004
T1
T2 5124300I
F1 6A/250V
RT1 SG-40
LF1
J1
J2
U1 CNY17-2WE
U501 LM339N
U601 LM339N
U701 LM339N
Q601 2N4123
Q101 MPSA06
Q201 MPSA56
Q301 MPSA06
Q401 MPSA56
Q2 BU278
Q3 MPSA06
Q1 BFW33A
RS COMM
RS V1
4
3
2
1
A
B
C
D
E

Schematics, Layouts




CAUTION
FOR CONTINUED PROTECTION AGAINST RISK OF FIRE
REPLACE ONLY WITH TRIAD ELECTRIC INDUSTRIAL
CO., LTD. TYPE 51S. RATED 3A, 250V.
F101
3A/250V
T101
VR101
VOLT-ADJ
V-CENT
V-SIZE
P301
P205
P303
P206
VR104
H-PHASE
VR205
CONTRAST
VR206
BRIGHTNESS
VR301
V-SIZE
VR302
V-CENT
CR201
C101
C116
C117
C118
C119
C121
C125
C127
C135
C137
C138
C225
T201
T202
T102
Q101
Q105
Q201
Q202
Q302
Q305
Q306
IC101
IC102
IC103
IC104
IC302



CD-1035E, EM Video Board

PART: CD9600 DESC : Color Display CRT Samsung M23LCD32X02

Main Board Sync Processing Circuit

IC201	WT8041
D301	1N4148
D302	1N4148
D303	1N4148
D304	1N4148
D305	1N4148
D310	1N4148
D311	1N4148
D312	1N4148
D313	1N4148
D314	1N4148

Main Board Horizontal Deflection Circuit

IC202	74LS123
IC203	MC1391P
IC302	LM358
IC303	LM393
Q201	2SC945/1815
Q202	2SA733/1015
Q203	2SA733/1015
Q204	2SC945/1815
Q209	2SC1213A
Q210	2SC5129
Q211	2SC2236
Q212	2SA966
Q301	2SC945/1815
Q302	2SC945/1815
D201	1N4148
D202	1N4148
D203	FR104
D204	HER305/306
D205	FR306
D206	FR306
D207	FR104
D208	FR104
D215	1N4148
D216	1N4148
C213	2200P, 50V
C222	1.8µ 250V
C225	5100P, 1.6KV
C226	3900P, 400V
T201	EI-19 34501901239
T202	EI-19 34501902146
T203	FBT 34710100952
L201	8.7µH, 36080106330
L202	300µH, 36080111431
L301	1.4Mh, 36080105732

Main Board High Voltage Circuit

Q207	2SA733/1015
Q208	2SC945/1815
Q213	2SC945/1815
Q214	2SC945/1815
Q215	2SC945/1815
Q216	BF421/423
Q401	2SA733/1015
Q402	2SC945/1815
D209	FR104
D210	FR104
D211	1N4148
D212	1N4148
D214	Z, 5.1v
D217	1N4148

PART: CD9600 **DESC : Color Display**

Main Board Vertical Deflection Circuit

IC301	TDA1675A
Q304	2SC2236
Q305	2SA966
Q306	2SC945/1815
D306	1N4148
D307	1N4002, FR104
D309	1N4148

Main Board Power Supply & Saving

IC101	CS3842A
IC102	TL431
IC103	4N35T
IC104	WT8048
IC105	7805
IC402	7812
Q101	2SK1404
Q102	2SB861
Q103	2SC2235
Q104	2SB861
Q105	2SC2235
Q106	TIP42C
Q107	2SC1213A
Q110	2SC945/1815
BD101	PB405
D101	FR157
D103	PR1002
D104	31DF2
D105	31DF4
D106	31DF4
D107	31DF4
D108	31DF4
D109	31DF4
D114	1N4148
D115	1N4148
D116	1N4148
D117	FR104
D118	1N4148
D119	1N4148
T101	40Mh, 34504000844
T102	34504000844
FS101	3.0A,250V

Video Board

IC401	LM1203
Q404	2SC1906
Q405	2SC1906
Q406	2SC1906
Q407	KSC3953
Q408	KSC3953
Q409	KSC3953
Q410	BF422
Q411	BF422
Q412	BF422
Q413	BF423
Q414	BF423
Q415	BF423
D401	1N4148
D402	1N4148
D403	1N4148
D404	1N4148
D405	1N4148
D406	1N4148

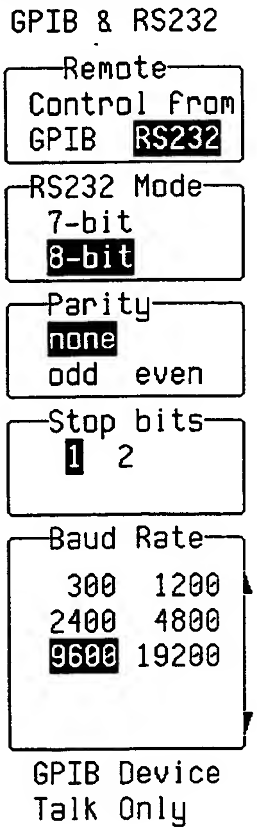
10. Connecting the LC574A

10.1 Introduction

LeCroy oscilloscopes are supplied with a list of plotters and printers known to work with them.
This list is not final, so any suggestions are welcome.

HP plotter responses to some RS-232 configuration commands have been evolved.
Consequently, the LC574A generation DSO support HP plotters of two types, 7470A and 7550A. The only difference lies in the RS-232 initialization codes. They may however, despite these changes, work with HPGL compatible plotters from other manufacturers. If the HPGL data is used as input for a CAD or word processing system, it might be necessary to remove the data preceding the in command.

Before connecting a plotter to a LC574A, do not forget to select the appropriate settings in the printer setup menu and the GPIB & RS-232 setup menu.



GPIB & RS232

Remote
Control from
GPIB [✓ RS232]

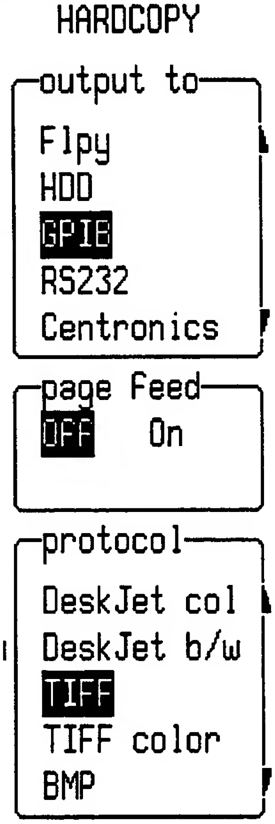
RS232 Mode
7-bit
[✓ 8-bit]

Parity
[✓ none]
odd even

Stop bits
[✓ 1] 2

Baud Rate
300 1200
2400 4800
[✓ 9600] 19200

GPIB Device
Talk Only



HARDCOPY

output to
Flpy
HDD
[✓ GPIB]
RS232
Centronics

page Feed
[✓ OFF] On

protocol
DeskJet col
DeskJet b/w
[✓ TIFF]
TIFF color
BMP

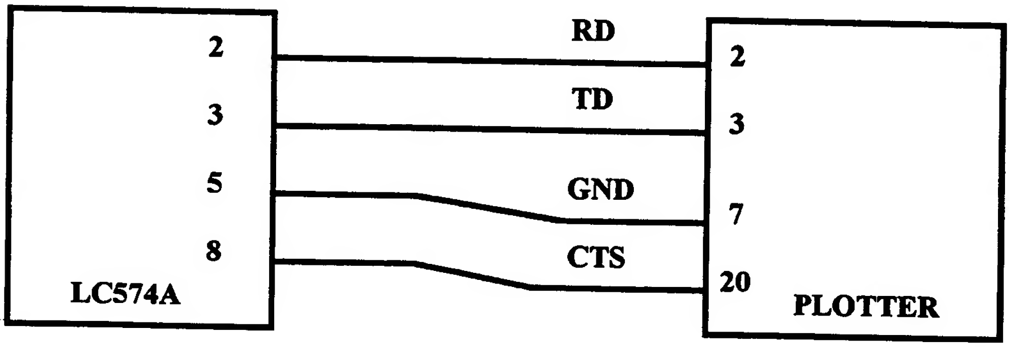
RS-232 connection

The following settings are assumed for the scope.
Baud rate : 9600
Character : 8 bits
Parity : none
Stop bits : 1
Any exceptions will be mentioned.

RS 232 interface

Pin 1 : DCD
2 : RD
3 : TD
4 : DTR
5 : GND
6 : DSR
7 : RTS
8 : CTS
9 : RI

A cable with the following pin out can be used in almost every case:



The cable has D25 connector with male pins on the plotter side, and a D9 connector with female pins on the LC574A oscilloscope side.

GPIB Connection

To have a plot done through GPIB initiated with the front panel screen dump push button, you must set the LC574A in talk only mode by selecting remote control from RS-232, and the plotter in listen only mode.
If a computer controls the GPIB Bus, both the scope and the plotter must be set in addressed mode (remote control from GPIB).
Remark: the listen only mode does not work on some old HP plotters such as HP7585B or HP7475. The plotter must be set to listener before being able to receive any commands, which is a violation of the GPIB standard.

10.2 Plotters

10.2.1 HP 7470A Plotter

Switch settings:

- RS-232 Connection:
  - S1 and S2 : 0 0
  - Y/D : D
  - A4/US : User selectable
  - B4 to B1 : 1 0 1 0
- GPIB listen only:
  - A4/US : User selectable
  - 16 to 1 : 1 1 1 1 1
- GPIB Addressed:
  - A4/US : User selectable
  - 16 to 1 : 0 0 1 1 1

10.2.2 HP 7550A Plotter

Responses to some ESC characters commands are not the same in this plotter as in older HP models like the 7470A. In fact, ESC sequences of commands which give excellent results in the 7470A can prevent any handshake in RS-232. Problems of this kind have been reported in the case of ESC.R and ESC.@ commands. When combined with ESC.I and ESC.N, ESC.@ breaks up all handshakes.

RS-232 configuration:

- Enter into display 5 (HP-IB MONITOR...).
- Select STANDARD OF STANDARD/ENHANCED.
- Enter into SERIAL sub-menu (display 6)
- For DATA_FLOW, select REMOTE. Either STANDALONE or EAVESDROP may be chosen.
- Enter into display 7 (DUPLEX, PARITY, BAUD).
- Select FULL duplex.
- Configuration PARITY and BAUD rate to the same values as on the DSO.

Do not start a plot while a sheet of paper is being loaded!

GPIB configuration:

If the scope is in TALK ONLY, the plotter must be in LISTEN ONLY.
Selection will be done at display 5.
Note : Its seems that the plotter must be powered off, then on again, to take any configuration change into account.

10.2.3 Hitachi 672 Graph Plotter (or NSA 672)

As this plotter is compatible with the 7470A, select this mode on the plotter menu page.
Switch settings

- RS-232 Connection:

Sw. A, 1 and 2 :1 1 (ISO A3) or (ISO A4).
Sw. A, 3 to 8 :1 0 1 1 0 1
Sw. B :1 1 1 1

Note : When switches are set to ISO A4, the pen must be manually repositioned at the top of the page (or plotter reset by powering it off and on) before loading a new sheet of paper.

10.3 Printers

Interfacing is possible through RS-232, GPIB and Centronics.

10.3.1 Centronics Printers

Most printers use a Centronics parallel connection which makes direct connection possible to the LC574A using the F9300-6 Centronics interface board. If a serial to parallel converter is used, in the printer setup menu select device type Epson, and remote control from RS-232.

RS-232 Remote control port settings:
Baud rate : 9600 or 19200
Characters length (bits): 8
Parity : none
Number of stop bits : 1

The following printers and printer switch positions have been tested via serial to parallel adapter.

	Switch 1	Switch 2
1. Epson LQ-1000	1, 2, 3, 4 : ON	2, 6, 7 : ON
2. Diconix 150P	1 : ON	2, 6, 7 : ON
3. HP-ThinkJet 2225C	2, 4, 5 : ON	
4. HP-DeskJet 550 C	all down	6 up for 19200 bauds

Note: all Epson and Epson Compatible printers are likely to work if the switches are set properly, (Some experimentation may be required).

Some available serial to parallel converters need power through the RS-232 lines. Do not use them, as we do not guarantee that the serial port is able to furnish enough power.

10.3.2 RS-232 Printers

10.3.2.1 Epson FX80

It is possible to use the standard RS-232 cable. Such a printer has the optional RS-232 interface " #8143 " installed. The configuration that follows is valid for the default scope setting. The standard cable is usable.

In the particular case of an FX850:

- the main switches SW1 SW2 remain at the factory configuration

SW1	:	1	2	3	4	5	6	7	8
		OFF	OFF	ON	OFF	OFF	ON	ON	ON
SW2	:	1	2	3	4				
		ON	OFF	OFF	OFF				

- the 8143 switches are set to:

1	2	3	4	5	6	7	8
ON	OFF	OFF	OFF	n/a	OFF	OFF	ON

- the 8143 jumpers remain at the factory settings:

J1	J2	J3	J4	J5	JC	JNOR	JRVE	JF	JX
OFF	OFF	OFF	OFF	ON	OFF	ON	OFF	ON	OFF

Note: Epson printers only support XON/XOFF support handshake if they have a print buffer. Such printer are : FX, FX+, JX-80, LQ-800/1000, EX-800 and LQ-25000. Otherwise, use DTR/RTS handshake.

10.3.2.2 Citizen 120D

To use this printer with the default RS-232 setting and default printer setting of the LC574A, select the following switch configuration:

DIP switch bank 1 : all OFF except 3 and 8
DIP switch bank 2 : all OFF.

10.3.2.3 HP LaserJet

Make sure that page feed is ON in the plotter menu to use the LaserJet. It is advisable to start out in single density with a size of A5. Then, depending upon the internal buffer size on the LaserJet, the image size and/or density can be increased. At one point, the internal buffer size of the DSO is also reached. The image is simply truncated, indicating that either density or size have to be reduced.

10.3.2.4 HP ThinkJet

To use printer with the default RS-232 setting and with the default cable select the following switch configuration:

- Mode switch:

1	2	3	4		5	6	7	8
0	0	0	0	: 11" page length	0	0	0	0
			1	: 12" page length				

- RS-232 switch:

1	2 3	4 5
1	0 0	0 0
(use DTR handshake)	(8bits, parity none)	(9600 bauds)

Note : it may be possible that old ThinkJet recognize only the Epson protocol. If it is the case use the Epson.

10.3.2.5 HP DeskJet 550C

The standard cable is usable. The printer has been tested at 19200 bauds with the following configuration :

Switch 1 or Bank A : all down

Switch 2 or Bank B : 6 up for 19200 bauds, all the other down

10.3.2.6 Brother Printers

The Brother M-1509 and M-1709 have been tested with a serial connection. On the oscilloscope select "Epson FX-80 or compatible printer".

The switch settings are identical for both the printers:

	1	2	3	4	5	6	7	8
- SW1 :	ON	ON	ON	OFF	ON	n/a	n/a	ON

	1	2	3	4	5	6	7	8
- SW1 :	←		ALL OFF			→		

	1	2	3	4	5	6	7	8
- SW1 :	OFF	OFF	OFF	OFF	11" : OFF 12" : ON	OFF	ON	OFF

10.3.3 GPIB Printers

10.3.3.1 HP QuietJet

Make sure the dip switches on the backplane of the printer are set to

- SRQ enable: 0

- GPIB listen only:
  Listen always: 1
  A5 to A1: 0 0 1 1 1

- GPIB Addressed:
  Listen always: 0
  A5 to A1: 0 0 1 1 1

10.3.3.2 HP ThinkJet (HP 2225A)

Make sure the dip switches on the backplane of the printer are set to

- SRQ Enable: 0
- GPIB listen only:
  Listen always 1
  A5 to A1: 0 0 1 1 1

- GPIB Addressed:
  Listen always: 0
  A5 to A1: 0 0 1 1 1

10.3.3.3 HP PaintJet (black/white only)

Make sure the dip switches near the GPIB connector are set to:

- GPIB Listen only:

  NORM/SCS: NORM
  A3 to A1: 1 1 1
  PC8/ROM8: N/A
  ENG/MET: has to match paper size ENG = 11" MET = 12"

- GPIB addressed:

  NORM/SCS: NORM
  A3 to A1: any combination except 1 1 1(correspond to add. 0-6)
  PC8/ROM8: N/A
  ENG/MET: has to match paper size ENG = 11" MET = 12"

10.4 Information on GPIB

10.4.1 Introduction

This section is a simple description of the GPIB interface as an aid to understanding the interface in the LC574A DSO: it is not intended as a complete specification of the system.

The GPIB system is designed for the interaction of a number of devices, which may transmit or receive information as required. The system includes data lines over which the actual data are sent, bus management lines for control, and handshake lines to ensure correct acceptance of data at the right destination.

The main features of the bus are summarized below:

Maximum number of devices	15
Maximum bus length	20 meters or 2 meters per device, whichever is less.
Connection	star or chain

Note that more than half of any connected devices must be powered up, even if they will not be used.

Data lines	8 DIO	1 to 8
Handshake lines	DAV	Data available
	NRFD	Not ready for data
	NDAC	not data accepted
Bus management lines	EOI	End or identity
	IFC	Interface clear
	SRQ	Service request
	ATN	Attention
	REN	Remote enable

Active level	+0.4 V
Inactive level	+3,3 V

Note that all signal lines are active low, and that they are wire 0Red to allow participation by all devices.
In addition, there are 8 ground lines, making a total of 24 lines.

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